

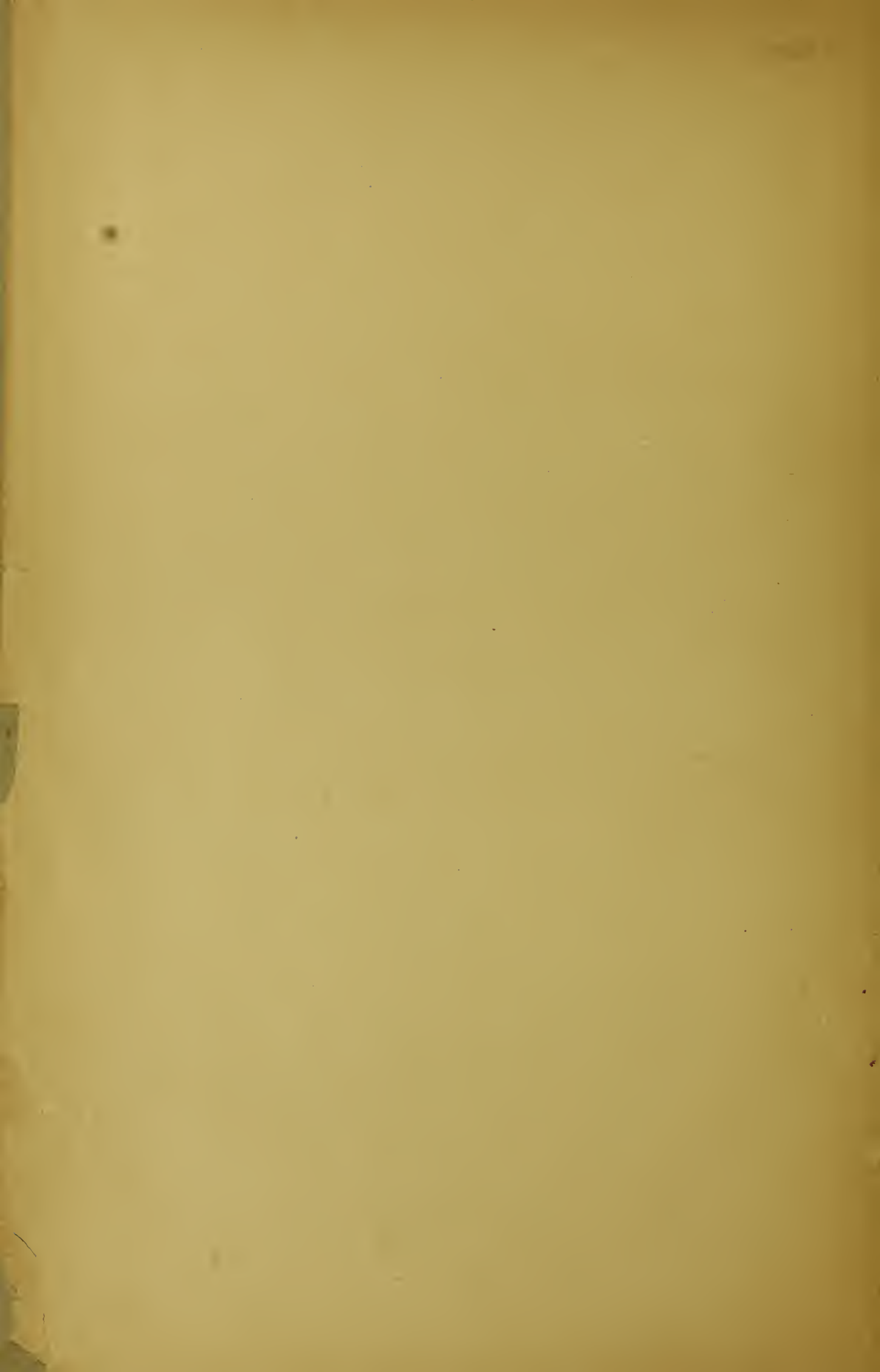
Richard A. Reece M.D.

LOCAL GOVT. BOARD,
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LOCAL GOVT. BOARD,
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(1)

Report to the Local Government Board by Major-General A. de Courcy Scott, R.E., and Mr. W. H. Power, on an Inquiry into the Quality of the Water supplied by the East London Waterworks Company.

WE beg to report that, in pursuance of instructions from the Local Government Board, dated 10th February 1887, we held an inquiry at the Town Hall, West Ham, on the 8th and 16th March last, as to the quality of the water supplied by the East London Waterworks Company.

This inquiry was directed under the provisions of section 35 of the Metropolis Water Act, 1871, in view of complaints made by the Corporation (the Urban Sanitary Authority) of West Ham, respecting the presence of eels in the Company's mains.

There were present at the inquiry on the first day, for the Corporation of West Ham, Mr. F. E. Hilleary, Town Clerk; and for the East London Waterworks Company, Mr. Bonner Maurice. On the second day, for the Corporation of West Ham, Mr. J. S. Lazard, Solicitor; for the East London Waterworks, Mr. A. F. Lawrence, Counsel, instructed by Messrs. Bircham and Co. Mr. W. B. Bryan, Engineer to the East London Waterworks Company, and the Medical Officer of Health and the Sanitary Inspector of West Ham also attended. In consequence of the inability of the Town Clerk to remain present on the 8th, the proceedings on that day were purely formal. Our appointments under 35th section of the Metropolis Water Act of 1871 and notice of the inquiry having been read, we adjourned to the 16th March.

On the last-mentioned date the inquiry was resumed, and first the correspondence between the Sanitary Authority and the East London Waterworks Company, on the subject under inquiry, was read and put in. This correspondence arose in September 1884, when several eels of considerable size were found at various places in West Ham in pipes delivering the water of the East London Company. In a particular instance an eel in a putrid state having been cut out of a supply pipe, the Chief Sanitary Inspector wrote to the Engineer to the East London Waterworks Company on the subject. The Engineer in his reply stated that the Company had been troubled very considerably in the warm weather for the three previous summers in the way mentioned by the Inspector, and he attributed the occurrence of eels in the water pipes to the giving way of a filter bed at Lea Bridge in 1879, which accident admitted for a time unfiltered water into the pure water basin of the filter, and thence into the mains, and along with it, as was supposed, some small eels and other fish. The eels he assumed to have since bred and multiplied in the filtered water of the Company.

The matter does not appear to have been re-opened until 17th July 1886, when the Chief Inspector wrote to the Secretary to the East London Waterworks Company, complaining of repeated stoppage of supply pipes by eels. On the 31st July a further complaint was addressed by the Sanitary Inspector to the Secretary. It stated that several samples of water recently taken in particular streets from the mains of the Water Company were found to be offensive in smell, and that each of them contained a large quantity of organic matter.

Between the 6th July and the 11th August, some 14 or 15 additional cases seem to have occurred of discovery and removal of eels from the water pipes, and on the latter date the Sanitary Authority formally addressed the Local Government Board on the subject. The Sanitary Authority stated that the water supplied to part of its district was already to a certain extent polluted by the presence in it of eels, and expressed apprehension of increase of pollution of the water from this cause, with corresponding danger to the health of the district. Copy of the Sanitary Authority's correspondence with the

Water Company was enclosed for the Board's information, and the Sanitary Authority went on to ask that the Board would, under the circumstances, exercise its powers under the Metropolis Water Act, 1871 (sec. 35), by appointing some person to inquire into and report on the quality of the water furnished by the East London Company and as to the means to be taken for removing the grounds of complaint.

Between the 11th and 26th August, a house-to-house inspection was carried out, by the General Superintendent of Waterworks and the Assistant Sanitary Inspector of West Ham, of all houses whence complaints had recently been made that illness had been caused by the Company's water. In only three of these, however, did the Water Company's official find the least turbidity of the water, and in one case only had it in his opinion any perceptible smell.

The Water Examiner reporting on the matter to the Local Government Board, 26th August, remarked that only one case of actual illness had been discovered, and he was of opinion that the statements of the Sanitary Authority had been of an unnecessarily alarming character.

This was followed on the 14th September by additional information from the Sanitary Authority of West Ham, respecting stoppage of water pipes in houses resulting in the discovery in the pipes of putrid eels; particularly of a case in which seven persons in a house in Warton Road became ill, one of them with typhoid fever, in consequence it was presumed of swallowing water thus tainted.

On 30th September, the West Ham Sanitary Authority further pressed on the Board its view that the health of its district was menaced by the presence of eels in the East London Water Company's pipes, and on the 12th October 1886 forwarded, at the request of the Board, a copy of the results of analysis of a sample of the water delivered to the house last alluded to.* On the 13th October, the Water Examiner reported that the details of this case as given by the Sanitary Authority were substantially correct; but he animadverted on the insanitary state of the house in question, and its surroundings.

On the 14th October, the Secretary to the East London Waterworks Company wrote to the Board on the subject of alleged injury to health by use of the Company's water, and while admitting that an eel had been found in the pipe delivering water to this house, impugned the surroundings of the house as being unwholesome and as sufficing in themselves to cause illness; and he forwarded a joint report from Drs. Tidy and Percy Frankland to the same effect. Towards the end of October, vigorous efforts seem to have been made by the Company to get rid of the eels, by emptying reservoirs and mains from Lea Bridge and Old Ford, and cleaning them out. On the 10th December, the West Ham Authority again addressed the Board, challenging the statements of Drs. Tidy and Frankland, and adducing further instances of the finding of eels, which had recently occurred.

It will be seen from the correspondence cited, that one of the chief points in dispute between the Sanitary Authority and the East London Water Company, was the cause of certain cases of illness, and notably of a case of typhoid fever which occurred in a particular house at or about the time when a putrid eel had been present in the supply pipe of the house.

Upon the question as to whether or not specific fever or other illness had been caused by water tainted by dead eels, we, after due consideration, had come to the conclusion that it would serve no useful purpose to take evidence or hear arguments on one and the other side; and accordingly we stated our views on this subject at the opening of the inquiry; but at the same time we announced another very definite conclusion at which we had arrived, namely, that water in which a putrid eel was present, or water which had passed recently over or through such decomposing animal matter, was not water that could be regarded as pure and wholesome.

No objection was made on either side to our suggestion that evidence as to injury to health from use of water contaminated by dead eels should be excluded from the inquiry.

A map of the district showing the places where eels, alive or dead, had been found, and a list of such cases, were also produced. This list, with the report of the analyst on a sample of the water which was alleged to have caused illness, is attached to this Report.

* See Appendix to this Report.

For convenience of reference the chief facts respecting the occurrences of eels in the water supply of West Ham which were put in are here stated in tabular form.

Date.	Place where found.	Condition in which found.	No. on Map and on List.	Remarks.
1884.				
September	16, Paul Street - - -	Putrid -	20	House supply tainted.
„	Knight's Court, West Ham Lane -	Dead -	8	„ „
„	Hamfrith Road, Romford Road -	Putrid -	7	„ „
? 1885*	“Duke of Cambridge” Public-house, Victoria Dock Road.	„ -	31	„ „
1886.				
April 21 -	Urinal, Plaistow - - -	Not stated -	24	—
Spring -	20, Romford Road - - -	Putrid -	10	House supply tainted.
„ -	Harrow Wharf, Stratford - -	Dead -	15	—
July -	54 and 56, Layton Road - -	„ -	3	House supplies tainted.
July 12 -	Beaumont Road - - -	Alive -	26	Pipe cut.
„ -	Urinal, Barking Road - - -	Putrid -	29	On three occasions.
July 14 -	“Green Man” Public-house, High Street, Stratford.	„ -	16	House supply tainted in ball valve.
„ 16 -	“Green Man” Public-house, High Street, Stratford.	Dead -	15	House supply tainted, in supply pipe gateway.
„ 20 -	30, Union Street, Marsh - -	Putrid -	18	House supply tainted.
July -	Green Gate Street, Plaistow -	Dead -	25	„ „
„ -	Solway Road Board School, Stratford.	Putrid -	6	„ „
„ 29 -	Tucker Street, Canning Town -	1 putrid, 4 alive.	28	Supply in main tainted.
„ 31 -	5, Waddington Terrace, Windmill Lane, Stratford.	Putrid -	21	House supply tainted.
„ -	Brown's Road, Plaistow - - -	Alive -	22	—
August 4 -	Urinal, Plaistow - - -	Not stated -	24	—
„ 5 -	36, Angel Place, New Town, Stratford.	Putrid -	2	Supply in main tainted.
„ -	Main in Stratford - - -	Alive -	2	—
„ -	Urinal, Broadway, Stratford -	„ -	9	—
„ -	Romford Road - - -	Putrid -	11	House supply tainted.
„ 9 -	Argyle House, Tenby Road, Stratford.	Alive -	5	—
September 11 -	16, Union Street, High Street, Stratford.	Putrid -	17	House supply tainted.
„ -	Park Road, Portway, West Ham -	Alive -	21	In main.
„ -	3, High Street, Stratford - - -	Putrid -	14	House supply tainted.

* The time of occurrence of this case is very uncertain. It is referred to 1885 on the authority of Edward Bowden (see No. 27 in appended list), who in the spring of 1887 stated that “about two years ago” he took a putrid eel from the supply pipe of the public-house in question.

Date.	Place where found.	Condition in which found.	No. on Map and on List.	Remarks.
1886— <i>cont.</i>				
September 13	Warton Road - - -	Putrid -	13	Seven persons ill.
„ 29	2, Morecambe Street, Canning Town.	1 dead, 1 putrid.	30	Main.
Autumn -	327, Barking Road, Plaistow -	Putrid -	27	House supply tainted.
„ -	Scott Street, Canning Town -	„ -	32	Main.
October 14	Palmer's Works, Warton Road -	„ -	12	„ „
„ 27	2, Morecambe Street - -	Dead -	30	House supply tainted, also dead eel in main.
November 30	1, Alice Street, Tidal Basin, Canning Town.	„ -	33	One eel, two small fish; main.
„	Richmond Street, Plaistow -	„ -	33	Main.
December 29	14, South Street, Stratford Marsh -	Putrid -	19	House supply tainted.

The above were admitted by the Counsel for the East London Waterworks Company, and all of them occurred, as has been said, within the Urban Sanitary District of West Ham.

Summarising the statement, and omitting from present consideration the comparatively few cases recorded as having occurred in 1884, it appears that from April 21st to December 29th, 1886, there were 32 authenticated instances of the detection of eels in water pipes. In 24 instances the eels were dead or putrid, in six they were alive, and in other cases their condition was not stated.

Notwithstanding that the Counsel for the East London Company expressed willingness to accept the several instances and particulars scheduled by the Sanitary Authority, we considered it desirable to hear the statements of a certain number of eye witnesses, and to examine them as to facts. Ten persons were therefore called before us for this purpose. Their evidence related to cases Nos. 12, 28, 6, 14, 26, 9, 25, 20, 4, and 19 in the foregoing tabular statement, and we give a summary of the evidence in respect of four of them, which we regard as sufficiently representative cases.

Solomon Plaistow, a varnish maker, living at Palmer's Works, Warton Road, stated that a few days before the 6th September 1886 a stoppage occurred in the water supply in his house. On the 6th September an inspector of the East London Waterworks Company called to inspect the meter, and his attention was called to the matter. He promised to report it, in order that it might be attended to; but for several days no one came. Witness's son about this time was taken ill, and his illness was considered to be typhoid fever. After a lapse of a week, *i.e.*, on the 13th September, the Water Company's men came, but for a day or two failed to ascertain the cause of the stoppage. Ultimately the communication pipe was cut on the outside of the water meter, next to the street main, and a putrid eel was found in it. Before the removal of the eel a sample of the water had been collected by allowing the drip from the open tap to flow into a vessel. The stoppage was so nearly complete that it took more than 24 hours to collect one gallon. The witness in cross-examination stated that he could not be sure that the Water Company's men did not come the day after complaint had been made to the Company by his employer.

George West, living at 9, Eva Cottages, Junction Street, Canning Town, stated that he is a gate-keeper at the Gaslight and Coke Company's premises in Tucker Street, and that while standing at his gate at the latter end of July 1886, he saw the Water Company's men draw a plug from the end of a 2-inch communication pipe, with the result that an eel in a putrid condition was flushed out. Witness further stated that he had seen a live eel flushed out of the same pipe on four or five other occasions.

Alfred Reed, builder, Mawby Grove, stated that on the 5th July 1886, he received instructions to examine the water supply arrangements at the Solway Road Board School. He attended there on the 6th, and examined the water. It smelt and tasted very offensively, and he thought it was not fit to drink. The supply pipes here were disconnected, cleared out, and again connected, but the water remained "just as bad" as before. It was then all run off again from the cistern, and the main having been disconnected on the Company's side of the meter, a large eel in a putrid condition was found two-thirds through the stopcock. The pipes were then reconnected, and washed out, and the cistern refilled. The water was afterwards found to be good.

Mrs. Hannah Curtis, living at 3, High Street, Stratford, stated that in September 1886 her water service suddenly stopped. The supply remained stopped eight or nine days. After it had been stopped five or six days she sent to the East London Waterworks, and the Company's men came about three days later. A putrid eel was then found in the end of the supply pipe, over the ball-valve, near the cistern. The water had tasted very badly.

On behalf of the East London Waterworks Mr. W. B. Bryan, Engineer to the Company, was called as a witness.

Mr. Bryan described in general terms the arrangements whereby water drawn from the Lea (which water had admittedly furnished the eels complained of), is led to the filter works at Lea Bridge; and he told in considerable detail the story of the accident to a particular filter bed there in 1879 that admitted unfiltered water during several hours to certain sections of the Water Company's service, and which was believed by the Company to have been the occasion of eels getting established in the water pipes. Upon the subject of eels in their relation with the water service, Mr. Bryan gave a good deal of evidence. Mainly it was to the effect that the number of eels inhabiting the Company's filtered water had never been, relatively to the total bulk of the water service, other than extremely small; that in 1886 only had eels at any time been anywhere abundant; and that very rarely indeed had eels at any time manifested themselves in the Company's water pipes elsewhere than in the district directly served from the reservoir at Old Ford; and he described, for hereon he was especially challenged by the complainants, in minute detail the various measures undertaken by the Company for getting rid of eels that had become domiciled in their water pipes or reservoirs, and the precautions, past and present, adopted for prevention of access of eels to any part of their water service.

For facilitating apprehension of the total evidence obtained by us, which we now propose setting out under several separate headings, a brief description of the various works of the East London Water Company is necessary.

The East London Waterworks Company has three sources of supply, the River Lea, the intake from which is at Chingford, wells in the chalk at Walthamstow, Chingford, and Old Ford, and the Thames at Sunbury.

The last is only used when the two former sources are insufficient to supply the Company's area; and the amount of water that the Company is permitted to take from the Thames in any one day is limited to 10,000,000 gallons. The water abstracted from the Lea at Chingford flows into high and low level settling reservoirs at Walthamstow, which have a capacity of 900,000,000 gallons; but not more than 600,000,000 gallons are at a sufficiently high level to gravitate to Lea Bridge and the filters there placed.

The water is led to Lea Bridge through an open channel and passes thence to the filters through culverts. These culverts convey water to the surface of the filter bed, but have no direct connexion with other culverts conveying the filtered water to the engine wells. The unfiltered water before entering the former culverts passes in some few instances through iron gratings with $\frac{1}{8}$ th inch intervals, but mainly through wire screens having $\frac{1}{32}$ of an inch interspaces. Of the filtered water a portion flows by gravitation through a cast iron 4-foot main to a covered reservoir at Old Ford. Before entering this reservoir the water passes through wire screens having $\frac{1}{42}$ of an inch interspaces. The remainder of the water filtered at Lea Bridge flows to the wells of the several pumping engines there, but before entering the engine wells it again passes through wire screens with meshes $\frac{1}{42}$ of an inch in width. The Lea Bridge engines pump the water to various parts of the Company's district. The iron pipe conveying water from Lea Bridge to the Old Ford Reservoir is called a gravitation main, but practically there is a head of pressure on it of about 4 feet. Vertical pipes are carried up from the main to a height of from 4 feet 6 inches to 10 feet from the ground surface, at intervals, for purposes of ventilation.

From the Old Ford Reservoir the water passes to the wells of six engines, which pump mainly to the West Ham district and a portion of the south-east of the metropolis, comprising Poplar, the Tower Hamlets, Stepney, St. George's in the East, Old Ford, Bow, and Bromley. That part of West Ham, *i.e.*, Forest Gate, which lies to the north of the Great Eastern Railway and east of the industrial schools, is supplied direct from Lea Bridge by means of an engine at that station. Water from the chalk wells is pumped directly into the district at Walthamstow and Chingford by water power. At Old Ford also chalk well water is pumped up by a special engine, and flows into the reservoir, where it mixes with the filtered water from Lea Bridge.

Water from the Thames is pumped into a reservoir at Hanworth, and thence passes through filters, and is again pumped over a stand pipe to a covered

reservoir at Finsbury Park, whence it gravitates over East London "middle level" district.

The water which is pumped from Lea Bridge to covered reservoirs at Woodford is there raised into areas at still higher levels, lying about Woodford, Buckhurst Hill, Loughton, Chigwell, and Walthamstow.

The mains leading to Woodford, those leading direct to West Ham (Forest Gate) from Lea Bridge, and those laid from the reservoir at Finsbury Park, are in communication with those leading into West Ham district and elsewhere from Old Ford, so that there is or may be intercommunication of water from the several sources of delivery. West Ham, for instance, can be temporarily supplied from Woodford, Finsbury Park, or from Lea Bridge.

The population supplied within the West Ham district numbers about 185,000. There are about 30,000 house-services, of which probably about 26,000 are always in use; and 150 miles of pipes. Within the whole district of the Company there are 137,505 house-services and 791 miles of pipes.

I.—THE FILTER ACCIDENT, 1879.

The filter accident regarded by the Water Company as the occasion of eels getting access to their water pipes occurred in the month of February 1879. At that date there were, at Lea Bridge, seven filters, which were constructed on principles now obsolete. They each contained a pure water basin, separated from the superincumbent filtering medium by flagstones (forming the floor of the filter proper) laid horizontally in close apposition to each other, and supported at intervals by earthenware pipes set on end. It appears that the defects of this construction had from time to time manifested themselves during some years before the failure on a large scale occurred, to which reference has been made. These were partial failures amounting to the displacement of a few flagstones and leakage of water into the lower basin.

The upper basin of the filter, which finally gave way, accommodated about a couple of million gallons, which got access to it from the Company's "canal" by a culvert protected by a grating having interstices of a size sufficient to admit a man's finger. Small eels, or other minute fish, could therefore pass on to the filter. The accident consisted in sudden collapse over an area of some 30 by 20 feet of the columns supporting the flagstones which formed the floor of the upper basin, and with the result that "sand, hoggin, and flagstones were all jumbled up together" in the pure water basin. Of course unfiltered water already in the upper basin, and additional unfiltered water rushing in through the culvert from the Company's "canal," passed directly into the pure water basin, bearing thither along with it contained eels and fish not too large to pass the grating on the culvert. As soon as this accident was discovered by the servants of the Company, the valve on the culvert admitting unfiltered water from the "canal" was closed, and it remained shut until after reconstruction (on improved principles) of the filter.* The total amount of unfiltered water which, by reason of this accident, passed directly into the pure water basin of the filter was roughly estimated at several million gallons.

II.—AREA OF THE WATER COMPANY'S SERVICE AFFECTED BY THE FILTER ACCIDENT.

The pure water basin of the damaged filter bed, whereinto several million gallons of unfiltered water passed as a result of the accident, was in direct connexion with two pumping stations only, namely, with the pumping well of a single engine at Lea Bridge, and with the reservoir and its associated pumping wells at Old Ford. Against influx of this unfiltered water and its contained matters, nothing now intervened at Old Ford, except a wire gauze screen having $\frac{1}{2}\frac{1}{4}$ inch interspaces, and nothing but an iron grating with much larger apertures at Lea Bridge. The Lea Bridge engine in question directly served a considerable area of what is called the middle level district, which includes Lower Clapton, Homerton, part of Bethnal Green, part of Mile End

* It should be noted that several of the servants of the Company, who were more immediately connected with the works to which the accident happened, have since died, and that consequently a considerable proportion of the evidence as to what happened is based on hearsay and hypothesis.

Old Town, Whitechapel, part of Stepney, and Shadwell. The Old Ford engines, six in number, delivered water, then as now, to the very large area of West Ham, Canning Town, and North Woolwich, and also to a considerable but not easily defined area of the south-east metropolis, comprising part of Poplar and Limehouse; but altogether not more than one-sixth to one-fifth of the total area of the Water Company's operations was directly affected by the accident; though of course the remainder of that area was or could be indirectly affected by means of the intercommunication of the water mains already referred to. Of the areas, however, that were directly involved, all could not have been, in our opinion, equally affected. We regard the area supplied from the single engine at Lea Bridge (the middle level area) as having been, comparatively speaking, exempt from the direct effects of the accident, and for the following reasons:—As soon as unfiltered water got access in abundance to the pure water basin of the damaged filter, it must needs at once have passed freely by gravitation in all directions [by which it could gain access to lower levels] into the Lea Bridge engine well in question, to the reservoir at Old Ford, and possibly to other pure water basins; but the amount of unfiltered water received at each point must have been very unequal. For instance, the quantity passing to the particular Lea Bridge engine well would be limited not only, and mainly, by the pumping capacity of the engine, but also by the interval of time between occurrence of the accident to the filter and recognition of it by the Company's servants. This we are told was three to four hours, and no doubt unfiltered water ceased flowing to this engine well almost as soon as, access of it to the damaged filter having been shut off, the filter could run itself dry by gravitation of its contained water to Old Ford. There can be no question, therefore, that the Old Ford Reservoir received the bulk of the several million gallons of unfiltered water which, by the accident, got access to the service of the Water Company. In the district then supplied from Old Ford any ill effects that might result from the accident would be expected to especially manifest themselves. This would be the whole of West Ham, Canning Town, North Woolwich, and certain parts of South-east London represented by Poplar and Limehouse.

III.—EELS IN THEIR RELATION TO THE COMPANY'S WATER SERVICE.

Precise information as to the date at which eels first made themselves manifest in the pipes of the Water Company, as to the abundance of such manifestations, and as to their limitations in time and in area, was not to be had at our inquiry. Partly this resulted from the fact that the complainants (the West Ham Corporation), being content to rest their case on recently observed occurrences of eels, especially of dead eels, in the water pipes of their own district, did not bring forward evidence of eels in the water pipes of other sanitary districts served by the Company; and partly it was due to the circumstance that the Water Company having been put on its defence in the matter of eels, was concerned rather in meeting allegations respecting unwholesomeness of its water than in supplying bases for further complaints against it. No doubt it was open to us to enlarge our formal inquiry by extending it to other sanitary districts served by the Company; and this we might have done had we not been able to satisfy ourselves in one and another way that the evidence which had been forthcoming as regarded West Ham sufficed in its broad outlines to represent the facts requiring elucidation to an extent which would fully serve the purpose of the inquiry.

As to the first appearance of eels in the water pipes, it was admitted in cross-examination by the Company's Engineer that the Company had been troubled by eels as long ago as 1881, one year namely before this officer's appointment; and he assented to the statement that since his appointment special complaint had arisen respecting eels, notably in 1884 and 1886 [oddly enough only a single instance, and that a doubtful one, is recorded of any eels blocking water pipes in 1885*]. The season of greatest abundance of eel manifestations had, it appeared, been the latter half of particular years, namely July to December, and especially the months of September and October 1886. With reference to area of distribution of eels the Company's Engineer stated that eels were very seldom found in parts of the Company's district other than those served directly from the reservoir at Old Ford; and that in the area thus supplied eels especially affected the lower levels. The latter he regarded as resulting to great extent from some selective process by the eels themselves; but in the main his evidence was corroborative of that obtained from other sources as to limitation

* See foot-note to page 3.

of eels to particular sections of the Company's service. And in the end we became satisfied that the distribution of eels had been such as could be accounted for on what we took to be the theory of the Water Company; namely, that eels had been directly delivered only from the works at Old Ford; and that in so far as eels had occasionally occurred in parts of the Company's area served by other pumping stations, they had got there by way of intercommunications of the Old Ford and other water mains. On the subject of quantity of eels, the Engineer altogether denied that having regard to the magnitude of the Company's operations the number of eels found was anything but infinitesimal, the very essence of his contention being that they were not only very local but also extremely few in number. More to this effect will appear when we come to speak later on of measures taken by the Company for getting rid of the eels.

Nothing could be learned at the inquiry, or after it, which gave support to allegations that had previously been made as to blindness, blanching, or attenuation of eels found in the water pipes of the Company. So far as we could ascertain, eels taken alive from the Company's filtered water differed as regards appearance in no way from ordinary fresh water eels, nor did they, on the authority of persons qualified to judge, taste differently. In size they appear to have varied greatly, namely, from 8 to 10 inches to 2 feet or more. One taken with several smaller ones from the Old Ford Reservoir on the occasion of its cleansing last autumn weighed as much as $2\frac{1}{2}$ lbs., a still larger one at the same time escaping from the reservoir into the engine well and becoming later on crushed during pumping operations.

IV.—MEASURES ADOPTED BY THE WATER COMPANY FOR SECURING THEIR SERVICE FROM INTRUSION OF EELS AND OTHER FISH, AND FOR GETTING RID OF EELS ALREADY ESTABLISHED IN THEIR RESERVOIRS AND WATER PIPES.

(a.) *Measures of Exclusion.*—On the occasion of the accident in 1879 to the filter bed at Lea Bridge the Company decided to reconstruct this, and six other filters similarly constructed, upon principles which were to give security that nothing should pass from receptacles of unfiltered water to receptacles of filtered water *except through approved filtering media*. For additional security wire gauze screens with interstices of $\frac{1}{4}$ -inch were placed on the culverts conveying the filtered water to the engine wells. Reconstruction of the above filters at a cost of 20,000*l.* had been completed, when in 1882 Mr. Bryan became Engineer to the Company. About this time, too, the Company appear to have regarded it as worth while to attempt exclusion altogether from their filter beds of eels and other fish, and accordingly they commenced replacement of the gratings on the culverts leading unfiltered water to the filter beds (gratings with interstices “which would admit a man's finger”) by wire gauze screens having $\frac{1}{4}$ -inch interstices. Substitution of these screens for the gratings is now all but complete, and, as before, all the Company's pure water basins remain covered so that “the water after being filtered never comes to the light until it is delivered to the consumer.” Last autumn, in view of complaints that had arisen about eels, the Company, for better security against any accident to filters that might on occasion permit passage of fish, however minute, into the filtered water receptacles, replaced their $\frac{1}{4}$ -inch interspace wire gauze screens intervening between these receptacles and the engine wells, by screens having $\frac{1}{2}$ -inch interspaces.

(b.) *Measures adopted for getting rid of Eels.*—At the date several years ago, when eels first became troublesome, the then Company's Engineer adopted frequent flushing of service pipes, after removal of end plugs, as a means of getting rid of them. This, it would appear, is the one method relied on by managers of waterworks elsewhere in this and in other countries, that have now and again in distributing unfiltered water to their customers at the same time distributed eels. And Mr. Bryan, after his appointment in 1882, continued his predecessor's practice, modifying it subsequently in minor, though, perhaps, important, points,* and applying it with especial frequency in parts of the Company's area most affected by the eels. But in 1886, upon increasing complaint by the West Ham people respecting abundance of eels in the water pipes, supplemented by allegations of danger to health as likely to accrue from the mortality which seemed to have set in among the eels there, some additional and special steps were taken by the Company with a view to get rid of the eels altogether. On the

* The pipes are emptied by drawing end plugs and closing the cocks, and allowed to become as dry as possible. A sudden flush of water is then sent through them by opening the cocks, with the result that in general eels present are carried through the opened end into the street.

assumption, seemingly, that eels in the Company's pipes had emanated from the reservoir at Old Ford, and that therefore eels were likely to be most abundant in the mains of that neighbourhood, 1,200 plugs were toward the end of October simultaneously drawn thereabouts, and vigorous flushing of the related pipes and mains indulged in. But not a single eel having been dislodged from the pipes by this procedure, the Company resolved on an emptying and thorough cleansing of the Old Ford Reservoir, and of the $3\frac{1}{2}$ miles of four feet conduit connecting it with the filters at Lea Bridge. This was accordingly done a few days later.

The reservoir having been pumped dry the conduit was swept out from Lea Bridge to Old Ford, and with the result that there were taken from the reservoir $8\frac{1}{2}$ lbs. of eels of various sizes, half a basket full of small fish (species not known), and less than a barrow load of sharp sand. The outcome of these operations sufficed to convince the Company of the validity of their contention that their filtered water was by no means infested with eels, and having by the above means cleared, as they believed, the Old Ford Reservoir, and the chief mains directly in connexion therewith, from such eels as had existed in them, the Company thereafter set themselves to work to get rid, by further flushing measures, of any eels that might remain in service pipes at a distance from Old Ford, devising also wire gauze traps to be placed at the junction of service pipes and mains for the purpose of arresting and capturing any eels that might attempt "to head down stream" out of the mains into house supply pipes of consumers.

In passing to the consideration of questions as to means whereby eels may have got access to the filtered water of the Company and of related questions as to the efficacy of measures taken for getting rid of the eels and for preventing their recurrence,—all of which have important bearing on the main object of our inquiry, namely, the quality of the East London Company's water,—we have first to note certain facts concerning the natural history of eels, to which regard must be had before any conclusions are permissible.

For centuries the method of reproduction of eels and the localities of their breeding grounds were enveloped in mystery. Until comparatively recent times all that was with certainty known on the subject was that full grown eels were in the habit of descending rivers towards the sea in greater or less abundance each autumn, and that each spring myriads of minute eels, from 3 to 5 inches in length, were to be observed ascending rivers, coming from out the salt or brackish water and penetrating to the furthest limits of the inland streams. Meanwhile a gravid female eel, and the male eel, though much desired by naturalists, remained undiscovered. Also it was known that full-grown eels could now and again be tempted to wander over land, especially over grass land, supersaturated by the heavy dews of autumn, for considerable distances; and that eel-fry, on their upward journey in spring, could, by their power of climbing and their capacity for passing over land, surmount seemingly impassable barriers intervening between their starting point and upland waters. But within the current century much additional knowledge has been gained about eels. It has been definitely ascertained that eels descending rivers to the sea in autumn are, all of them, female eels, and there is ground for believing that some, but not all, of these female eels return again up the rivers in the following spring or summer. Also it has been learned that the male eel (a much smaller fish than the full grown female) is rarely found in rivers many miles above tide range, and that eels breed only in the estuaries of rivers or in the sea. Beyond all question it would appear that in no single instance have eels been discovered to produce young in water not salt or at least brackish.

Viewed in the light of the above facts, the theory of the East London Water Company that eels introduced into their filtered water by the accident to the Lea Bridge filter in 1879 have since bred in their water mains, appeared to us to fall at once to the ground. Nevertheless, the belief of the Company that the filter accident had been, in some way or other, related to subsequent conspicuous prevalence of eels in certain sections of their service was not thereby altogether invalidated. As has been seen, the accident referred to had permitted passage of unfiltered water principally to the reservoir at Old Ford, and it was to areas getting their water supply directly from this Old Ford Reservoir that prevalence of eels had been very greatly limited. In so far, indeed, as areas otherwise supplied had now and again furnished specimens of eels, the facts were not inconsistent with the Company's belief, since eels in these other

areas could have got there indirectly by way of intercommunications of local mains with mains from Old Ford. However this might be, the parallelism between the area of the known chief distribution of the particular influx of unfiltered water and the area of chief recorded manifestation of eels in the pipes of the Water Company remained plain and unmistakeable; for the rest all that seems requisite in explanation of the eel manifestations was that minute eels should have passed on the occasion of the filter accident in considerable quantity along with the unfiltered water into the Old Ford Reservoir and have been pumped thence into the mains delivering water therefrom; so that later, *i.e.*, in subsequent years, these eels having advanced enough towards maturity to become influenced by migratory instinct could have been impelled in the season of autumn to head down stream on their way to the sea, and by so doing have blocked supply pipes of consumers, especially in the West Ham district. Whether or not eels had bred in the filtered water of the East London Water Company, it appeared that their presence in the pipes of the area supplied from Old Ford could be accounted for by the filter accident of 1879.

Thus the matter stood at the date of termination of our formal inquiry at West Ham; but we did not of course fail to note that there was another side of the question; that in point of fact evidence had been given us which was suggestive of caution in drawing inferences as to the precise method by which eels had entered the mains of the Water Company. For instance it could be asked, was it altogether certain that eels on the occasion of the accident to the filter in 1879, could have gained access to the Old Ford Reservoir? There were, be it remembered, obstacles to the passage of particulate matter of more than $\frac{1}{4}$ -inch diameter from the pure water basin of the damaged filter to the reservoir at Old Ford. At Old Ford there was, we had been told, on the culvert leading thereto an intercepting wire gauze screen having only $\frac{1}{4}$ -inch interspaces, through which all water had to pass before it could be pumped into the mains fed from the reservoir. Now a $\frac{1}{4}$ -inch aperture is a mere pinhole aperture, and though it would perhaps admit the newly hatched fry of small fish such as were found in the Old Ford Reservoir at its cleansing last October, we doubted very much whether it would suffice for the passage of eellets hatched perhaps several weeks previously many miles away in brackish or salt water, and which by the time they had ascended the Lea and passed through the chain of Walthamstow Reservoirs to gain the filter bed could be thought of as having attained at least the size of eel fry as ordinarily found in fresh water, which are several inches long and have bulk in proportion. Unless therefore mistakes had been made as to the date at which the $\frac{1}{4}$ -inch screens were put down by the Company, the explanation suggested by its officers of the presence of eels in the service pipes appeared seriously open to question. A second difficulty in unreserved acceptance of the theory (apart from the question of breeding of the eels) of the Water Company was suggested in the circumstance that the autumnal "run" of eels down stream into the house pipes of consumers had varied in dimensions in different years. Thus in 1884 there were several complaints as to eels blocking water pipes in West Ham, but in regard of 1885 there were none at all, or at most a single one,* though in 1886 they may be said to have abounded. The practical absence of complaints in 1885 certainly appeared on this hypothesis to require explanation. A third difficulty consisted in the fact that though we could not believe that eels had bred in the filtered water of the Company, the eels discovered therein had varied greatly in size. From the Old Ford Reservoir, for instance, there were eels taken in October of last year varying in weight from a few ounces to several pounds, and the circumstance was not the less remarkable when we were told that the reservoir had been cleaned out not much more than two years previously. In any case, and assuming that the reservoir had not actually been emptied for many years, an explanation was clearly wanted of the fact that five or six years subsequent to the date at which the eels were believed to have gained entrance to the filtered water, some were found to weigh only a few ounces, whereas others associated with them weighed almost as many pounds. So, too, as regarded the physical condition of eels found alive in the pipes of the Company. None of them appeared to have undergone sustained exposure to circumstances unfavourable to their development. So far as we had been able to learn, these eels had not appeared blanched, attenuated, or blind, as indeed had been alleged; rather they were well conditioned vigorous eels, differing in no conspicuous way from eels to be obtained from normal sources such as ponds and rivers. Yet another difficulty had concern with the fact that no evidence was before us of any abundance of eels having been noted on that section of the Company's area directly served from the single engine

* See foot-note to page 3.

well at Lea Bridge, which, like the Old Ford Reservoir, had received unfiltered water on the occasion of the filter accident in 1879. The difficulty hence arising was indeed a minor one for the reason that, as has been shown, it is like enough that no very considerable amount of unfiltered water had gone to the engine well in question, and that therefore many occurrences of eels in connexion with it were hardly to be looked for. Nevertheless, we suspected that if all the facts were known exemption from eels of the area served by this engine would have been found complete.

It was considerations of the above sort which induced us in our subsequent examination of the various works of the Water Company to be closely on the watch to detect any opportunities, casual or other, for entrance of eels to the filtered water of the Company.

At Lea Bridge, where are carried out all the filtering operations of the Company, the pure water basins are underground covered receptacles, all of them situated at a considerable distance from the water ways of the Lea. They are, and have been, surrounded, too, in each instance by a circlet of filters, all of which in their communications with the unfiltered water canal of the Company are themselves protected against passage on to them of fish by wire gauze screens, having for the most part only $\frac{1}{24}$ -inch interspaces. Under ordinary circumstances, therefore, eels have, and have had, no ready means of access to the neighbourhood of the pure water basins. But assuming that eels have, nevertheless, somehow reached (overland or otherwise) the neighbourhood of these basins, and have been able to pass into their interior through ventilation or other openings in the roofs of the basins, they could not, unless they were embryonic eels, subsequently have made their way to the engine wells on account of the intercepting wire gauze screens placed on the culverts connecting the engine wells with the basins. These screens are stated not to have, for several years, possessed interspaces larger than $\frac{1}{24}$ th of an inch, and now they have only $\frac{1}{42}$ -inch interspaces. As a result, therefore, of our investigations thus far, we could come to no other conclusion than this, namely, that the Company's water, as delivered to consumers by engines at Lea Bridge, is, and has been, especially well protected against intrusion of eels. But in reference to our examination of the works at Old Ford we are called upon to tell a different story

At Old Ford the single pure water receptacle of the Company is, like a Lea Bridge basin, an underground receptacle; but it is less a "basin" than a large storage reservoir capable of containing 1,500,000 gallons of filtered water. In other and important respects it differs, too, very widely from Lea Bridge basins. Though supplied like them almost wholly from the Lea Bridge filters, it is far distant from the site of filtering operations, being fed therefrom, as has been stated, by a conduit $3\frac{1}{2}$ miles in length, and unlike the Lea Bridge basins, which are removed a considerable distance from waterways of the Lea, this Old Ford Reservoir is close to the main stream of that river. Especially has this reservoir differed from the Lea Bridge pure water basins in regard of its provision against entrance to it, and against escape from it into its associated engine wells, of bodies that should be foreign to filtered water. And this difference between the Old Ford Reservoir and Lea Bridge basins has consisted essentially in the different position at the two places of wire gauze screens through which the filtered water is made to pass before it can enter engine wells. Thus the Old Ford Reservoir has, against access to it, along with Lea water, of particulate matter, a protection in excess of that possessed by the Lea Bridge basins. They have been made to rely in this respect chiefly on the sand, hoggin, and gravel of the filters, whereas the Old Ford Reservoir has had in addition wire gauze screens (formerly of $\frac{1}{24}$, more recently of $\frac{1}{42}$ inch, mesh) placed, one on each of two branches of its feeding conduit, just at the points where the conduit delivers to the reservoir; so that filtered water coming from Lea Bridge to Old Ford has been subjected to a further straining through mere pinhole apertures immediately before its arrival there. Obviously so long as these screens have remained intact, no fish that were advanced much beyond an embryonic stage could pass out of the conduit into the reservoir.* On the other, the Old Ford Reservoir has not been provided, as have been the Lea Bridge basins, with screens of the above sort on the culverts leading from it to its associated engine wells; these culverts have only been furnished with gratings for the interception of floating matters of considerable size (such as chips of wood which occasionally, it appears, get into the

* As regards the small fish (species not recorded) removed from the Old Ford Reservoir on the occasion of its cleansing last autumn, it is doubtful whether they had been residing in the reservoir or had been swept into it from the Lea Bridge conduit during the operations referred to.

reservoir) that might by possibility foul the pump valves. There has not been, therefore, anything to prevent foreign bodies of considerable magnitude in the water from passing out of the Old Ford Reservoir into the engine wells, to be pumped thence into the mains of the area served from this station. And the question arises: if this has been the case, can eels have obtained direct access to the interior of the Old Ford Reservoir by some route other than by the conduit from Lea Bridge, and so have become distributed in the water pipes of the area referred to? The answer is, they may have done, and for the following reasons.

The underground site of the reservoir in question is partly encircled by the River Lea, which forms one of the boundaries of the Old Ford works. The ground surface here is not many feet above flood level, and the river bank on the Company's side of the stream is much less steep than elsewhere in this neighbourhood. Full grown eels descending the Lea on their autumnal migration and becoming (as even eels might) discontented perhaps with the flavour of the stream on account of the manifold pollutions to which it is subject, would, if disposed to wander ashore for this or other reason, find in the gentle shelving bank of the Company's works the best opportunity hereabouts for indulging their whim. And so with eel fry and adult female eels ascending the river in spring and summer. Migrant and exploratory eels having ascended the river bank at a spot not far from the railway bridge, where the gradient for eels is perhaps easiest, and proceeding to wander in a direction at right angles to the river, would, in another few feet of their transit, have the satisfaction of finding themselves on the grass-clothed ground surface which is the roof of the reservoir. Disporting themselves gratefully hereon, and tempted perhaps to further explorations by some perception of their own that water less objectionable than the river water was in store near at hand, they could in another few yards discover their opportunity for dropping into the filtered water below them. This opportunity would be afforded them by the apertures in one or other of certain manholes or ladder holes in the roof of the reservoir. These manholes or ladder holes, or whatever they are called, are nearly flush with the ground surface, and though they are covered by heavy iron plates the centre plate of each has been in practice, seemingly for purposes of ventilation and for making temperature observations of the water, left raised a few inches, or even partially drawn aside, so as to produce a longitudinal aperture of sufficient size to admit a man's arm, and through which therefore an eel of many pounds weight could, if it discovered it, readily pass. Having thus obtained entrance to the reservoir, eels, governed always by their migratory instinct, and becoming perhaps sooner or later disappointed at the scanty nourishment to be got from filtered water, can be thought of as seeking to resume their *down stream journey*, and as passing voluntarily therefore to the engine wells at Old Ford to be pumped involuntarily into the mains charged from this station. Resuming once more in the water mains their down stream journey to the sea, eels that had been delivered from the Old Ford reservoir would tend to block house supply pipes after the fashion witnessed, and especially in the district from which complaint has chiefly come.

In opportunities then special to Old Ford for direct access of eels to the filtered water of the Company, and solely to that section of its service wherein eels have been chiefly manifested, there is at least an explanation of the eel occurrences alternative to that suggested by the Company; and in important respects it would appear a preferable hypothesis, sufficing as it does to account for difficulties not met by the other. In this way more easily than in other ways is explainable the fact of occurrence of eels *on the consumers' side* of wire gauze screens having only pinhole apertures, and the circumstance, too, that the quantity of eels discoverable in the supply pipes in different years has varied in seemingly capricious fashion. Also it will account for the fact that in carrying out the special measures adopted by the Company for getting rid of eels from their service in and about Old Ford, no eels at all were forced out from the mains when the 1,200 end plugs were simultaneously drawn in flushing operations hereabouts, though eels were found a few days subsequently in the reservoir itself. Again, this hypothesis serves to account for disproportions of size witnessed in the eels captured and for their "condition" as regards physical appearances and fitness for the table. For obviously it does not require that all the eels found should have got admittance to the filtered water several years ago and in one and the same stage of development; rather it can be thought of as involving repeated accessions of eels which far from being satisfied to inhabit the filtered water of the Company have seized all available opportunities for escaping from it. And finally it accounts for that freedom from eel manifestations (which we suspect to have been complete

freedom) of the whole of the area served from the particular engine well at Lea Bridge, to which, as also to the reservoir at Old Ford, unfiltered water got access during several hours after the filter accident in 1879.

But we are not concerned in advocacy of one over another hypothesis, nor indeed do we affirm that we have set out the only possible explanations of the occurrences in question. Our present object is a sufficiently definite one, namely, to form an estimate of the *quality* of the East London Company's water, especially as affected by the presence of eels in the water pipes, and by measures taken or possible to be taken by the Company in the way of getting rid of eels from their service and in prevention of recurrence of eels there. In this connexion only has validity of one or the other hypothesis any importance for us.

So far as the quality of the *aggregate* water furnished by the East London Company is concerned, we accept unreservedly the testimony of the Water Analyst, and of other chemical and bacteriological experts, that this water has been at least as good as that distributed by other London companies supplying river water. But, on the other hand, we accept, equally unreservedly, the analysis of a particular sample (copy of which is appended to this Report) as indicating that this water of the East London Company is not, when delivered to a given house through or over the body of a decomposing eel, fit and proper water for human consumption. The question for us, therefore, is (1), to what extent in the past has this Company's supply been liable to pollution arising through eels; and (2) what are the indications as to future liability of this water service to become polluted in similar fashion?

As to liability *in the past* of this water to pollution through eels the question has been, perhaps, already sufficiently, though incidentally, answered in the evidence adduced; but we may repeat that being at one with the officers of the Company in regarding the Old Ford Reservoir as the source whence eels have been directly distributed, we accept the evidence of the complainants as indicating the area of the Company's service which has been especially liable to pollution by eels, and as indicating also the amount of mischief to the water that has arisen in consequence. In other words we find reason for believing that less than one-fourth of the total area of the Company's operations has, as matter of fact, been subject to liability of its house supplies to become tainted by dead eels, and that in the area in question hardly more than one in a thousand of house supplies has actually been complained of as having been affected in this manner.

As to *future liability* of the Company's water to pollution through eels much less definite reply is forthcoming, since the answer given must differ according as one or the other of the foregoing hypotheses is accepted or rejected, thus:—

If the Water Company's theory be accepted in its entirety, namely, if it be believed that minute eels gained access years ago on one single occasion only to the filtered water and that they have since been breeding in the water pipes, the measures adopted by the Company for getting rid of the eels, extensive though they have been, give no certain guarantee against recurrence of eels with further blocking of supply pipes at another season. In so far, indeed, as the hypothesis implies preference or even consent of eels to a sojourn in water pipes, the special measures taken by the Company last autumn in simultaneous flushing of mains in the neighbourhood of Old Ford and in cleansing the reservoir and the conduit there, may appear to some extent superfluous, for eels that have become accustomed to living in water pipes may be continuing to reside (if not to breed) in mains far distant from Old Ford, and may even be making their way into other districts served by the Company by means of communications of local mains with those from Old Ford. Upon this hypothesis, therefore, any forecast of the future of the Company's service in regard to eels must be doubtful. So, too, with the Company's hypothesis apart from breeding of the eels in the water pipes. The hypothesis thus modified, so far as it is consistent with eels acclimatised to water pipes by preference residing in the smaller mains at a distance from Old Ford, gives no security that the various efforts of the Company in seeking to get rid of eels have been so completely successful that eels will not hereafter give rise to further trouble in West Ham and other places, although there is expectation, of course, that the supply of eels would eventually become exhausted. Upon the Water Company's hypothesis, therefore, whether or not it be made to include breeding of eels in the water pipes, further and sustained measures will be necessary not only for preventing eels "heading" out of the mains into house supply pipes but also for clearing the water service altogether of eels. These measures should certainly include frequent and profuse flushing of mains and

service pipes, with such other methods as may be devised and approved for getting rid of eels lodged in them ; and they might conveniently be supplemented by further development and application of the Company's apparatus for arresting and catching eels seeking to pass out of the mains into service pipes.

But if the alternative hypothesis which we have suggested may be accepted, the prospect for the future appears less unfavourable. Upon this hypothesis the blocking of water supply pipes by eels can be thought of as an evil working its own cure by means of natural laws continuing to operate on eels alike under circumstances favourable or unfavourable to their welfare. The hypothesis, be it remembered, regards the intrusion of eels to the Old Ford Reservoir as an occasional and autumnal affair mainly ; the immediate result, perhaps, of caprice or impertinent curiosity on the part of eels, but ruled nevertheless in the background by a migratory influence which, though not dissuading eels from entering the reservoir, forbids them (at any rate the maturer ones) to linger there or in the water mains to which they in further obeying it can get themselves transferred. On this view, therefore, the special remedial measures of the Company which cleared the Old Ford Reservoir of eels have been by no means superfluous, though they may need to be supplemented for some time to come by measures of the sort already referred to for the purpose of dislodging and capturing eels that may be awaiting in the mains another season for resumption of their seaward journey. In addition it would, on this hypothesis, appear important to interpose between the Old Ford Reservoir and the engine wells associated therewith wire gauze screens similar to those at present used for guarding the engine wells at Lea Bridge. Also it would appear desirable to secure the Old Ford Reservoir itself against intrusion of eels through apertures in the manholes in its roof. For this purpose it would be enough to place under each of the openings referred to wire gauze baskets contrived to catch any eels dropping into the reservoir, and so constructed as to retain all eels that might be caught in them.

16th July 1887.

A. DE C. SCOTT.
W. H. POWER.

APPENDIX.

Report of cases of Eels found in Water Pipes.

July 18, 1886.

Mr. Read, builder, Wharf Road, Stratford. Had putrid eel taken out of supply pipe at the Solway No. 6.
Road Board Schools, Stratford.
Caretaker, James Harbott, living at the schools, can give evidence.

July 14, 1886.

John Mercer, 3, Albion Street, Bridge Road, Stratford. Found putrid eel hanging out of ball- No. 16.
valve of the top cistern at the "Green Man" public-house, High Street, Stratford.

July 16, 1886.

Found supply pipe in gateway of same house stopped; cut pipe, and found dead eel about 10 or No. 15.
11 inches long.

In the spring of 1886 went to Harrow Wharf, High Street, Stratford; unscrewed iron pipe;
found dead eel in it 10 or 11 inches long.

July 31, 1886.

Mr. Charles Marshall, plumber, 12, Martin Street, Stratford. Water supply stopped at 5, Wad- No. 4.
dington Terrace, Windmill Lane, Stratford. Unscrewed ball-valve on tank, and found putrid eel
about 10 inches long in pipe.

In 1884 water supply stopped at 1, Hamfrith Road, Romford Road. Opened supply pipe in front No. 7.
garden; found putrid eel jammed against stop-cock.

August 9, 1886.

James Southgate, Argyle House, Tenby Road, Stratford. Supply stopped; had pipe cut; found No. 5.
live eel; it was dead when brought to Sanitary Inspector's office; measured $11\frac{1}{2}$ inches.

July 29, 1886.

George West, 9, Eva Cottages, Junction Street, Canning Town, when on duty as gatekeeper to No. 28.
Gaslight and Coke Company at the end of Tucker Street, Canning Town, saw the Water Company's
men take out plug at end of 2-inch main, and a large putrid eel about 2 feet long forced out,
followed by four smaller eels alive. Water Company's men buried the putrid eel, and took away the
live ones.

Spring of 1886.

Mr. Lewsey, 20, Romford Road. Found water in tank to have strange taste; supply pipe from No. 10.
tank got choked. Phillip Pardoe, of 19, Romford Road, applied force pump, and forced putrid eel
through the tap.

August 1886.

George Stace, Mrs. Pedley's gardener, Romford Road, took a putrid eel out of supply pipe to fish No. 11.
pond.

July 1886.

Mr. Goodman, market gardener, Greengate Street, Plaistow, without water for a week; supply No. 25.
pipe was cut, and dead eel found in pipe.

September 11, 1886.

Henry Ayres, 16, Union Street, High Street, Stratford. Without water supply three days; he No. 17.
unscrewed ball-valve from pipe, and found putrid eel about 9 inches long.

September 11, 1886.

- No. 14. Mrs. Curtis, 3, High Street, Stratford. Water service stopped. Water Company's men unscrewed ball-valve, and took out putrid eel.

September 13, 1886.

- No. 12. Mr. Plaistow, house on premises of Messrs. Jansen and Nicholson, Warton Road. Water Company's men cut supply pipe, and a putrid eel was taken out, and brought to Sanitary Inspector's office where it now is. This is the house where so many people were ill.

September 11, 1886.

- No. 21. Mrs. Neale, 52, West Road, Portway, West Ham. Water Company's men opened plug in Park Road, Portway; a live eel came out, which she afterwards brought to Sanitary Inspector's office; measured about 8 inches.

September 29, 1886.

- No. 30. William Evan, Sanitary Inspector, 29, Hudson's Road, Canning Town. No. 2, Morecambe Street, Canning Town, being without water, went down there; saw Water Company's men take out of pipe in street a dead eel, and afterwards saw them take portions of another eel out of stopcock in passage of house.

October 14, 1886.

- No. 12. William Dadley went to Messrs. Palmer's works, Marton Road. In his presence cover was taken off valve-box to main, and he saw what appeared to be the remains of putrid eels; portion of one about one inch in diameter.

October 27, 1886.

- No. 30. George Douglas, Assistant Inspector, saw a dead eel taken out of pipe in roadway opposite 2, Morecambe Street.

July 12, 1886.

- No. 26. William Penfold, 1, Chapman Road, Plaistow Park. Saw Water Company's men flushing out pipe in Beaumont Road, Plaistow. Large eel about 18 inches long came out of pipe. Penfold caught it, took it home, had it cooked, and ate it.

- No. 29. Alan Bagshaw, 46, Beatrice Street, Barking Road (employed by Corporation). Has seen supply pipe to public urinal, Barking Road, cut on three occasions, and on each occasion a putrid eel taken out.

- No. 22. Saw large live eel, about 15 inches long, flushed out of main at Brown's Road, Plaistow. Eel taken away by Water Company's men.

August 5, 1886.

- No. 2. Henry Groves, in employ of Mr. Taylor, Plumber, Janson Road, Stratford. Took putrid eel out of supply pipe 36, Angel Place, New Town, Stratford.

About same date.

- No. 2. Mrs. Humphreys, 40, Angel Place, New Town, Stratford. Saw a dead eel taken out of supply pipe in roadway by Water Company's men.
Also saw a live eel flushed out of main, about a foot long.

Autumn 1886.

- No. 27. Edward Bowden, 59, Swancombe Street, Canning Town. Water supply stopped at 327, Barking Road, Plaistow. Found in the supply pipe remains of what appeared to be a putrid eel.

- No. 32. Has seen live eel flushed out of main in Scott Street, Canning Town, by Water Company's men.

- No. 31. About two years ago he took a putrid eel about 15 inches long out of the supply pipe at the "Duke of Cambridge" public house in Victoria Dock Road.

December 29, 1886.

- No. 19. James W. Lloyd, 56, Vicarage Lane, Stratford. Took off house supply tap at 14, South Street, Stratford Marsh, and found putrid eel about a foot long. This is in the Sanitary Inspector's Office.

September, 1884.

Mrs. Renvoiza (now of 22, Paul Street, Stratford) then of No. 16, Paul Street, reported her son No. 20. ill of typhoid fever, and that after the water supply had been stopped four days, the pipe was examined and a putrid eel found by Mr. King, plumber, of 20, Paul Street.

She also reported a live eel 18 inches long having been flushed out of main in street by Water Company's men.

ADDITIONAL CASES.

November 30, 1886.

Joshua Beldan, 1, Alice Street, Tidal Basin, Canning Town. Shop without water six days. Saw No. 33. Water Company's men open the supply pipe in roadway in front of shop and take out an eel about 10 inches long, and two small flat fish. Taken away by watermen.

Phillip Pardoe, 19, Romford Road, Stratford, the man who forced putrid eel out of pipe at No. 8. 20, Romford Road, states that two or three years ago at Knight's Court, West Ham Lane, after a pipe which supplied eight houses had been detached from the main by Water Company's men, he, Pardoe, applied a pump at the stop cock end and forced out a dead eel 14 inches long in the presence of Mr. Edwards, Company's foreman.

Has also seen on different occasions eels flushed out of pipes by watermen taking out plugs in No. 23. street. One case was in Richmond Street, Plaistow.

July 20, 1886.

30, Union Street, Marsh. Putrid eel taken out of $\frac{3}{4}$ inch pipe by Charles Alger, 5, Park Place, No. 18. High Street, Stratford.

April 21, and August 4, 1886.

Messrs. Carter and Hines. Took eels out of Ferules Urinal Plug.

No. 24.

July, 1886.

Mr. Hersom, plumber, found remains of putrid eels in pipes at 54 and 56, Leyton Road, New Town. No. 3.

August, 1886.

Mr. Land, gasfitter, of the Broadway, Stratford, states that he took an eel out of supply pipe to No. 2. public urinal, Broadway, Stratford, which measured $14\frac{1}{2}$ inches long.

Palmerston Buildings, 34, Old Broad Street,
London, E.C., September 22nd, 1886.

REPORT on sample of "Water taken from Household Supply Branch, Jansen and Nicholsons, Wharton Road, 11th, 12th, and 13th September 1886," contained in one-gallon stone jar received from Mr. Wm. Horn, Chief Sanitary Inspector to West Ham Local Board, September 15th, 1886.

Analysis.

General appearance	-	-	-	Very turbid, a sediment formed on standing.
Smell	-	-	-	Putrid and very offensive.
Total solids	-	-	-	18·20 grains per gallon.
Chlorine	-	-	-	1·20 "
Equal to chloride of sodium	-	-	-	1·98 "
Nitrogen as nitrates	-	-	-	0·081 "
Equal to nitric acid	-	-	-	0·363 "
Free ammonia	-	-	-	0·168 "
Albumenoid ammonia	-	-	-	0·140 "
Oxygen absorbed from permanganate:—				
Acting for 15 minutes	-	-	-	0·1176 "
" 4 hours	-	-	-	0·1844 "
Microscopical examination of sediment	-			Swarms of vibrios and moving organisms.

Thomas A. Pooley, B.Sc., F.C.S., F.I.C.,
Analytical and Consulting Chemist (Public
Analyst for the county of Essex, borough of
Maldon, &c.).

Remarks.

The foregoing analysis shows that this water is badly contaminated with organic matter; it is, in fact, quite putrid.

I understand this water was drawn from the East London Water Company's supply pipe, in which dead fish have been occasionally found; the organic contamination in this water is such as might be derived from this source.

I need scarcely say that the putrid and offensive character of this water renders it absolutely unfit for use and highly dangerous to health.

(Signed) THOMAS A. POOLEY, B.Sc., F.I.C., F.C.S.,
County Analyst for Essex.

To the West Ham Local Board of Health.

Accurate copy.
11th October 1886.

(Signed) WM. HORN,
Chief Sanitary Inspector.

2

Inquiry into the Alleged Failure of the East London Water Supply in the Summer of 1895.

TO THE RIGHT HONOURABLE H. CHAPLIN, M.P., PRESIDENT, LOCAL
GOVERNMENT BOARD.

SIR, 11th November 1895.

WE have the honour to report that, in accordance with instructions, we held an inquiry into the alleged failure of the East London Water Supply in the Summer of 1895, at the Hackney Town Hall, on the 1st, 2nd, 3rd, 4th, and 5th days of October 1895.

Mr. PEMBER, Q.C., and } appeared for the East London Water Company.
 Mr. CRIPPS, Q.C., M.P. }
 Mr. BALFOUR BROWN, Q.C., with } appeared for the combined Vestries of East
 Mr. BEVAN, and } London.
 Mr. ELDRIDGE }
 Mr. FREEMAN appeared for the London County Council.
 Mr. MORTEN appeared for West Ham.
 Mr. VINCENT (solicitor) appeared for the Leyton District Council.
 Mr. PRIOR GOLDNEY (City Remembrancer) appeared to watch on behalf of the Corporation of the City of London.
 Mr. CORBLE watched the inquiry on behalf of the Lee Conservancy Board.

There was a fairly large attendance of persons interested and of the general public every day throughout the inquiry.

As a complete transcript of the shorthand notes is put in, we do not propose to burden this Report with an epitome of the same, but will proceed at once to give an analysis of the evidence as it bore upon the points raised.

It will perhaps make the case a little easier to follow, if we at once give a few of the leading facts and figures with respect to the East London Water Company.

Estimated maximum daily supply to be obtained from existing sources:—

	Gallons.
River Lee and storage reservoirs	30,000,000
River Thames	10,000,000
Gravel springs at Hanworth	2,000,000
Deep wells in Lee Valley	11,000,000
Total	<u>53,000,000</u>

Estimated population (1895) of district supplied by the East London Water Company, 1,202,557.

Average daily supply per head of the population, 35 to 36 gallons.

Estimated daily supply of water required, 43,000,000 to 45,000,000 gallons.

Present total storage capacity of existing reservoirs, 741,000,000 gallons, inclusive of water lodged in the gravel between the puddle walls and the inner slopes of the reservoirs, or 615,000,000 gallons, exclusive of water lodged in the gravel.

Important dates in 1895 referred to in evidence:—

May 26th.—All reservoirs full and overflowing.

June 28th.—Reservoirs half empty.

June 28th.—Constant service intermittent; supply cut off for nine hours at night.

July 13th.—Supply given for three hours only a day.

July 28th.—Supply increased again to six hours a day.

August 17th.—Supply further increased to 11 hours a day.

September 8th.—Constant service restored.

Area of supply of East London Water Company :—

(a.)[†] Metropolitan Districts wholly or partially supplied :—

Whitechapel.

*Shoreditch.

Mile End.

*Hackney.

Saint George-in-the-East.

Woolwich (part north of the Thames).

Limehouse.

*City of London (part of St. Botolph,

Poplar.

Aldgate, and part of Bishopsgate).

Bethnal Green.

(b.) Extra-Metropolitan Districts wholly or partially supplied :—

West Ham Urban.

Barking Town Urban.

East Ham Urban.

Woodford Urban.

Leyton Urban.

Waltham Holy Cross Urban.

Wanstead Urban.

*Tottenham Urban.

Walthamstow Urban.

*Epping Rural (Parishes of Chigwell,
Chingford and Loughton).

*Ilford Urban.

Under the instructions given to us, our inquiry was to be directed to—

- I. The circumstances connected with the deficiency of water supplied in the metropolitan area comprised in the district of the East London Water Company, and in the district of the Leyton Urban District Council ;
- II. The effects of the deficient supply as regards the public health ; and
- III. The means which should be adopted with a view of preventing a recurrence of any such deficiency.

The case was argued before us under the above three headings, and we propose to treat the arguments and evidence heading by heading.

J.—CIRCUMSTANCES CONNECTED WITH THE DEFICIENCY OF WATER SUPPLIED IN THE METROPOLITAN AREA COMPRISED IN THE DISTRICT OF THE EAST LONDON WATER COMPANY, AND IN THE DISTRICT OF THE LEYTON URBAN DISTRICT COUNCIL.

The following is a brief summary of the contentions urged against the East London Water Company with respect to this section of our inquiry.

On behalf of the Vestries and the Leyton District Council it was contended—

1. That there was, during July and August, 1895, widespread scarcity of water throughout the whole of the East London Water Company's district.
2. That the Company did not in the circumstances use every means in its power to maintain a constant supply.
3. That the Company at that time unduly favoured one class of customers to the detriment of another class—to the pecuniary benefit of the Company.
4. That the Company had been to blame for delay in the construction of additional means of storage, and the provision of additional pumping power.
5. That the damage to the Company's mains and to the consumer's pipes during the great frost of 1895 was due to the initial error of the Company in laying their mains too near the surface.
6. That the waste subsequent to the frost from the Company's mains and from consumers' pipes might have been remedied much earlier if there had been efficient inspection.

On behalf of the London County Council it was contended that the failure of the East London Water Company to give their consumers a constant service supply during July and August was not attributable to unusual drought, and that the want of more storage had nothing to do with it, but that it was due either to the "shattered mains" of the Company, which they had not repaired, or to leakage from consumers' pipes, owing to the neglect of the Company to put into force the regulations against the householder prescribed by Act of Parliament, because it was cheaper to pump the water to waste than to enforce the regulations.

It will now be necessary to deal with the several contentions in detail.

1. *That there was, during July and August, 1895, widespread scarcity of water throughout the whole of the East London Water Company's District.*

In support of the statement as to general scarcity, nine householders (midwives, laundresses, butchers, &c.), resident in widely separated parts of Hackney, as well as several official witnesses, were called to prove the existence of scarcity of water throughout that district, but in order to save repetition of similar evidence, the complainants contented themselves with calling official witnesses (medical officers of health, surveyors, or sanitary inspectors) from the metropolitan districts of Poplar,

* Portions only supplied by East London Water Company.

Limehouse, Bethnal Green, Mile End, St. George-in-the-East, and Shoreditch, and from the Leyton urban district, to testify as to the general scarcity of water in their districts during July and August. No witnesses were called for those portions of the metropolitan districts of Whitechapel, Woolwich, and of the City of London comprised within the area of supply of the East London Company. Evidence was also given by persons employed in connexion with street watering, to show the straits to which the people were reduced for lack of water, whilst two witnesses were called to prove that on certain days no water at all had reached them, or that the supply had been totally insufficient for domestic purposes. Of these two witnesses, the first, Dr. Buck, stated that he had no water from 9 a.m. on September 9th until 8 a.m. on September 12th. The second, Mr. Read, stated, that from 8.30 p.m. on July 10th until 11.30 p.m. on July 11th, or 27 hours, he received no water, and that, further, he was without water for several days, with the exception of a small dribble for half-an-hour a day during the time that the water was supposed to be on for three hours a day.

In answer to these statements the Water Company at once admitted that the constant supply service was interrupted as regards so much of their district, "some two-thirds of the whole," as was not served by constantly-charged mains, to the following extent:—

From June 28th to July 12th the supply was cut off for nine hours at night.

From July 13th to July 27th a supply was only given for three hours out of the twenty-four.

From July 28th to August 17th a supply was given for six hours a day.

From August 17th to September 7th a supply was given for 11 hours a day, and after September 8th a constant service supply was reverted to.

It was, however, stated by the Water Company that all those consumers (about one-third of the whole) who received their supply direct from the constantly-charged fire mains suffered no intermission whatever.

The loss and inconvenience inflicted upon individuals by the interruption of the constant service were admitted, with regret, by the Water Company; but it was contended that this loss and inconvenience had been greatly exaggerated in the letters written to the newspapers, and that had cisterns been in use in the houses no inconvenience need have occurred.

With respect to the district of the Leyton District Council, Mr. Dawson, the surveyor, admitted that Leyton was outside the metropolis, and was, therefore, not under the purview of the Metropolitan Water Acts of 1852 and 1871, and was, consequently, not entitled to a constant supply. He also admitted that the supply actually furnished to Leyton had never fallen as low as 12 gallons per head per day, exclusive of water used for gardens.

With respect to the special complaint of Dr. Buck, Mr. Bryan, engineer to the Water Company, explained that the intermission which took place in his supply on September 9th was due to the fact that two of the great trunk mains under the river at Lee Bridge had to be disconnected and shifted a certain distance to enable the widening of that bridge to be carried out. That although this work was done as rapidly as possible by relays of men working night and day, the water was unavoidably cut off from the district in which Dr. Buck's house is situate for a certain period between September 9th and 12th.

With respect to Mr. Read's statement, Mr. Bryan, whilst admitting that, under certain conditions of draw-off from the mains, water might not reach a house for the full period during which the water was turned on in the mains, stated that it was physically impossible, unless there was some defect in the pipes of a particular house, for the water delivered there to be reduced to "a mere dribble," as the service reservoirs of the Company were maintained to their full level throughout the whole period of the intermittent supply.

2. *That the Company did not in the circumstances use every means in its power to maintain a constant supply.*

Under this heading it was argued:—

(a.) That, although the Company had power to draw 10,000,000 gallons a day from the River Thames, they actually drew, according to the reports of General de Courcy Scott, the Metropolitan Water Examiner, in the month of June, when the drought was excessive, an average daily amount of 7,439,167 gallons only, and that during the month of July the average daily amount drawn from the Thames was 9,129,281 gallons, an amount still considerably below that to which they were entitled.

Storey, 571-596.
Davis, 597-608.

Buck, 35-41

Read, 388-418.

Bryan, 2249.

Bryan, 2249, 2265.

Bryan, 2265, 2269.

Bryan, 2272-75.

Bryan, 2275-77.

Bryan, 2277.

Bryan, 2250, 2278.

Dawson, 1296-1314.

Bryan, 2500.

Bryan, 2278-84, and 2514 to 2533, and 2898-99.

- (b.) That although the Company possessed powers enabling them to purchase water from other of the London water companies, they did not avail themselves of such power until late in the drought, when they purchased a small quantity from the New River Company only; and
- (c.) That, owing to some curious carelessness at the time, or just before the drought commenced, the principal storage reservoir of the Company was emptied for the purpose of being deepened.

In answer to these allegations, in support of which no witnesses were called on behalf of the Vestries, evidence was submitted on behalf of the Company to the effect that:—

(a.) As regards the supply pumped from the Thames the allegation of the complainants was unfounded, since during June, July, and August as nearly 10,000,000 gallons a day as it was possible to obtain was pumped from that source, the actual figures being 9·87 million gallons per day. It was explained that General Scott's figures did not include water which was drawn from the gravel in the Thames Valley, and which was passed through the main from the Thames to the Company's works.

(b.) As regards the neglect to purchase water from other London companies, in addition to that obtained from the New River Company, it was shown that it was physically impossible for the East London Company to obtain water from any other company than the New River Company, as the Thames main, which alone passes through the districts of other companies, could not carry more than 10,000,000 gallons per day, and that its carrying capacity had been exerted to the full during the whole of the drought. The amount of water purchased from the New River Company was stated to have been 156,000,000 gallons.

(c.) The statement that one of the principal reservoirs had been emptied at the time of or just before the drought, was positively denied by the Company. It was shown that as regards the reservoir in question, the Racecourse reservoir, which is only one of the smaller reservoirs of the Company—contractors had been engaged from March 28th in raising the puddle banks, which were above top-water-level; that the reservoir was absolutely full on May 26th; that water was taken from this reservoir along with that from other storage reservoirs day by day during the drought to meet the consumption of the district; that by the end of June there was sufficient of the gravel shore of the reservoir exposed to enable workmen to go in and take out a considerable amount of gravel; that this abstraction of gravel went on so long as the water remained low; and that immediately after rain in July, when the water began to rise again, this work was discontinued and the men resumed the construction of the puddle banks. Further, it was maintained that during the whole period not a drop of the water of this reservoir had been wasted.

3. *That the Company, during the period of interruption of their constant service, unduly favoured one class of customers to the detriment of another class, to the pecuniary benefit of the Company.*

In support of this allegation it was urged on behalf of the Vestries:—(a) that the Company had throughout the period of scarcity given a constant supply of water to persons who paid for it by meter, but that persons who paid by rates were placed upon the intermittent supply system; and (b) that during the same period the Company supplied a neighbouring authority, the Tottenham Local Board, with water because it was paid for in bulk by meter.

It was further contended that if the Company had cut off the whole of the trade supplies, which amount in the aggregate to eight gallons per head per day, there would have been no necessity to place their domestic customers on short allowance.

In support of the first charge under this heading, evidence was given by several witnesses to prove that persons receiving their water by meter had a constant supply throughout the whole period of scarcity, whereas others not supplied by meter obtained an intermittent supply only. In this connexion the meter supplies to certain manufacturing, to the Workhouse and Infirmary, to the hospital, and the public baths and washhouses were especially cited.

With regard to the second charge, no witnesses were called on behalf of the Vestries.

(a.) In answer to the allegation that undue preference was shown to persons receiving their supply by meter, it was maintained by the Company that about two-thirds of

Bryan,
2497-99.

Bryan,
2762-72.

Bryan,
2770-71.

Bryan, 2759.

Bryan,
2501-4.

Bryan,
2668-93.

Day, 361-
387; Har-
gan, 1064-
1089; Ry-
gate, 1206,
1240-72;
Firth, 1334-
90; Grully,
1391-1415.

Bryan,
2638-39.

the total supplies by meter were connected with the constantly charged fire mains; that these included most of the large trade supplies; and it was further maintained that all the consumers paying water rates on the great trunk mains, about one-third of the total number in this class, received a constant supply in exactly the same manner as those supplied by meter from the same mains. It was stated, on the other hand, that about a third of the total number of premises supplied by meter were connected with the ordinary service mains, and that these meter supplies were cut off in exactly the same way and for exactly the same time as those to consumers paying water rates, about two-thirds of the total, who were connected with the same service mains. It was pointed out also that the Company were compelled to connect the large 'trades' supplies with their large mains, as a small 3-inch or 4-inch service main would not give the large intermittent supply that is required, neither, it was alleged, could a large business be made dependent for its water supply on a main, which at any time might be temporarily stopped, for the adjustment of any one of the hundreds of house connexions communicating with it. It was argued that these supplies were not interfered with or put on an intermittent service, not because they happened to be paid for by meter, for the loss of revenue to the Company from the partial suspension of a part only of the trade supply for the short period of scarcity would have been very small, but because to have cut off this trade supply, and so caused the stoppage of the large works in the district, would have thrown a number of people out of employment, and so have added poverty and want to the distress caused by the scanty water supply. One of the witnesses called on behalf of the Vestries admitted that to have cut off the water supply from public institutions and factories would have aggravated the distress. With respect to the contention that the Company should have cut off all the trade supplies, and by that means have obtained enough water to supply their domestic customers, it was argued that under the Company's Act of 1853 it was just as compulsory upon the Company to supply water for trade as for domestic purposes (*see* 16 & 17 Vict. c. clxvi. ss. 74 and 79). Evidence was also given on behalf of the Company to show that although water used for the purposes of road watering and the like was paid for by meter, the Company on July 15th issued a notice to all the local authorities within their district asking them to exercise the greatest economy in road watering, on the ground that it was absolutely necessary to conserve all water as far as possible for domestic necessities.

Bryan,
2479-84,
2636.

Bryan, 2639.

Bryan,
2892-97.

Rygate,
1240-59.

Bryan,
2618-24.

Bryan, copy
of letter,
dated
July 15th,
handed in,
2296.

(b.) With respect to the charge against the Company of having supplied the Tottenham Local Board with water during a period when they were unable to give a proper supply to their own district, it was proved that Tottenham is situate within the limits of the Water Company's district, and that its supply was compulsory upon the Company. It was, moreover, shown that the supply to the Tottenham district was reduced in the same proportion as that to the whole of the Water Company's district. The amount of water given to Tottenham in June under the constant service supply was 418,000 gallons a day. In July this was reduced to 178,000 gallons, whilst in August it rose, *pari passu*, with the rest of the district to 237,000 gallons a day.

16 & 17 Vict.
c. clxvi.
ss. 53, 57,
and 58.

Bryan,
2463-77.

4. *That the Company had been to blame for delay in the construction of additional means of storage and the provision of additional pumping power.*

Under this heading it was argued on behalf of the Vestries that the means of storage possessed by the East London Company were admitted by the Company to be insufficient, that their pumping power was defective, and that when the Bill which the Company promoted in Parliament in 1893 was rejected, it was the duty of the Company to have proceeded with the works, and paid for them out of the profits of the Company.

As to this contention of the Vestries, it was stated on behalf of the Company that to carry out the necessary works for increasing their storage involved the deviation and raising of a public road, for which it was necessary to get compulsory powers from Parliament, and further, that if there had been no opposition raised to this alteration of the road, to have proceeded with the work without the sanction of Parliament would have been a most unusual course to have taken, and have rendered the Company liable to be blackmailed.

Bryan,
2787-802
and 2878-82.

We propose to deal with the question of additional storage at length at a later period of this Report, when we come to consider the defence of the Company.

5. *That the damage to the Company's mains and the consumers' pipes during the great frost of 1895 was due to the initial error of the Company in laying their mains too near the surface.*

Lovegrove, 870. Evidence on behalf of the Vestries with respect to the shallowness of the mains, and to the damage done to them by the frost, was given by Mr. James Lovegrove, chief surveyor to the Hackney Vestry. His evidence was to the effect that between January 1st and April 30th, 1895, 1,536 openings were made in the roads of the Hackney district by the East London Waterworks Company for the purpose of repairing pipes injured by the frost; that of these 1,536 openings, 93 referred to the mains; that the depth of the water mains in the Hackney district varied from 1 foot 6 inches to 3 feet, the average depth being from 2 feet to 2 feet 6 inches; that in one 4-inch main in Terriss Road, which is situate at a depth of 1 foot 9 inches below the surface, the water was frozen solid from end to end.

Bryan, 2647. On behalf of the Water Company, it was admitted that in the Hackney district, 431 openings had been made with a view to remedying defects in the Company's mains, and 1,110 to those in the consumer's pipes, between January 1st and April 30th, 1895. It was further admitted that the depth of the mains varied from 2 feet to 5 feet below the surface; and that if mains were laid 3 feet below the surface they were practically unaffected by frost. It was stated, however, that there were no very shallow mains in the country districts, and that any very shallow mains that there might be were situate within the metropolitan area, and that in that area there had been very few cases of mains frozen at all, except in the Hackney district. It was further admitted on behalf of the Company that the communication pipes leading to the houses came off, as a rule, from the upper part of the barrel of the main, and that in consequence, if the mains themselves were too shallow, it followed that the point of junction with the communication pipe would also be too near the surface. It was, however, stated that for a great many years past the Company had insisted upon all communication pipes being laid at a minimum depth of 2 feet 6 inches when in the "open air."

6. *That the waste subsequent to the frost from the Company's mains and from consumers' pipes might have been remedied much earlier if there had been efficient inspection.*

With respect to the alleged inefficient inspection of waste carried out by the Water Company, evidence was given on behalf of the Vestries by Mr. Barratt, Surveyor to the Vestry of Bethnal Green, who stated he had found enormous waste going on from consumers' pipes, on occasions when he had been inspecting his district, and that he had frequently written to the Engineer of the Company, calling his attention to the waste, and that he believed the remedy for this state of things was more efficient inspection on the part of the Company.

In answer to the charge made with regard to the delay in securing repairs of mains and of pipes injured by the frost, evidence was given on behalf of the Company to the effect that all the mains in the metropolitan portion of the Company's district were repaired by April 8th, and those outside the metropolitan district by April 19th; that as regards consumers' communication pipes the Company, in addition to the ordinary staff of waste inspectors, some 40 to 50 in number, had employed a large number of additional inspectors, bringing up the total inspectorial staff to 100, during the period commencing immediately after the break-up of the frost until the time when the constant service was cut off, and that these inspectors made over 50,000 inspections, not only once, but twice and three times. Where pipes and fittings were found defective, owners were served with notices calling on them to repair and to make good. After a reasonable time a second inspection was made, and where defects still existed, further notices were served, and it was only after a third notice that in a few cases the water supply was cut off, and proceedings were instituted against offenders. The reason given for the Company's leniency in these cases was, that owing to the large number of breakages in the lead pipes after the frost, plumbers could not be found in the district in sufficient numbers to carry out the repairs more rapidly.

The charge made on the part of the London County Council that the failure of the East London Water Company to give their consumers a constant service supply during July and August was due to the non-repair of the shattered mains of the Company, was supported by evidence given by Mr. Binnie, the chief engineer of the London County Council.

Mr. Binnie proved by figures taken from General de Courcy Scott's monthly reports, that the daily average quantity of water pumped into the district by the Water Company during the months of February, March, April, and May was greater in 1895 than in any one of the three previous years. The figures are given below:—

Binnie,
1421-32.

	1892.	1893.	1894.	1895.
	Gallons.	Gallons.	Gallons.	Gallons.
January - - -	46,575,263	51,599,832	43,994,249	45,024,651
February - - -	44,900,986	43,801,924	41,007,163	59,115,094
March - - -	44,892,613	42,114,500	39,955,351	54,383,758
April - - -	42,617,480	44,022,910	41,534,088	55,326,662
May - - -	42,913,805	42,132,114	41,003,262	51,162,599

He also showed from the same reports of General Scott that the water pumped by the East London Water Company to their district month by month for the five months, February to June inclusive, in 1895, compared with the maximum pumped during those months in any of the preceding three years, gave an excess supply pumped from February to June 1895 of 1,501,232,000 gallons, an amount of water equal to 34 days of the average maximum supply during that period in former years. The figures are given in the table below:—

Binnie,
1433-58.

EAST LONDON WATER.

COMPARISON of the Water supplied to the District during the months February, March, April, May, and June 1895 with the maximum amounts supplied in the same months in previous years. Also showing the total quantity of water so supplied in the East London Company's district during the same months.

Date.	Average Supply per Twenty-Four Hours.	Supply during Month in excess of any previous similar Month in former Years.
1.	2.	3.
	Gallons.	Gallons.
February 1895 - - - - -	59,155,000	
February 1892 - - - - -	44,900,000	
Difference - - - - -	14,255,000 × 28	= 399,140,000.
March 1895 - - - - -	54,384,000	
March 1892 - - - - -	44,892,000	
Difference - - - - -	9,492,000 × 31	= 294,252,000.
April 1895 - - - - -	55,326,000	
April 1893 - - - - -	44,023,000	
Difference - - - - -	11,303,000 × 30	= 339,090,000.
May 1895 - - - - -	51,163,000	
May 1892 - - - - -	42,913,000	
Difference - - - - -	8,250,000 × 31	= 255,750,000.
June 1895 - - - - -	51,335,000	
June 1892 - - - - -	44,235,000	
Difference - - - - -	7,100,000 × 30	= 213,000,000.
Total excess supply during February to June 1895 - - -		1,501,232,000.

The average maximum supply during the months above referred to in former years amounted, therefore, to 44,192,000 gallons. Thus :—

	Gallons.		
February 1892	-	-	44,900,000
March 1892	-	-	44,892,000
April 1893	-	-	44,023,000
May 1892	-	-	42,913,000
June 1892	-	-	44,235,000
Total	-	-	220,963,000 = 44,192,000.
Excess of 1895	-	-	$\div 5$ 1,501,232,000 = say 34 days.

Binnie,
1511-16.

Mr. Binnie also showed from the returns given in General Scott's monthly reports that the water taken from the River Lee by the East London Company and the New River Company was greater in amount month by month, from February to May 1895, than in any of the three previous years.

	1892.	1893.	1894.	1895.
	Gallons.	Gallons.	Gallons.	Gallons.
January	57,420,018	62,519,598	57,163,834	59,835,525
February	55,458,273	54,734,864	58,554,198	71,927,191
March	56,889,067	56,438,468	56,118,565	67,187,176
April	56,056,108	58,093,564	57,132,716	69,226,068
May	59,085,636	54,056,017	55,504,182	61,043,494
June	59,191,170	53,401,292	52,911,162	58,894,000
July	58,003,476	50,293,617	54,174,918	49,639,000

From the figures contained in the foregoing tables, Mr. Binnie concluded that the failure of the Water Company to give a constant service to their customers during July and August 1895, could not have been occasioned by the want of such supply, arising from unusual drought, as he maintained that these figures showed that there was no scarcity of water and no drought, and it was further contended that the failure of the supply was not attributable to want of storage, as the Company had pumped away during the five months, February to June, an excess of water equal to 34 days maximum supply. Mr. Binnie adhered to a statement made in a report of his, dated July 30th, 1895, addressed to the London County Council, namely, that his "belief is " that what the Company are now suffering from is not an insufficiency of supply, but " that their pipes became so shattered during the frost of February last as to become " so leaky that the water is wasted, and does not reach the customers."

This theory of Mr. Binnie's, that the loss of water during the drought of July and August was due to shattered mains of the Water Company, was not, in our opinion, proved at the inquiry, nor supported by other witnesses called on behalf of the Vestries. We have already referred to the fact that the Company admitted that a number of their mains had been fractured during the winter frost, and also to the fact that these mains had not been all repaired until the middle of April. There is no doubt in our minds that the increased waste over the ordinary supply of the Company, shown in Mr. Binnie's table, as regards February, March, and April, was largely due to the escape of water from the fractured mains of the Company as well as from the fractured communication pipes, for, from Mr. Binnie's second table, it would appear that there was a diminution, in May, in the excess of the supply pumped into the district amounting to upwards of 50,000,000 gallons when compared with the excess in each of the three previous months. It is further to be noted that all the Company's reservoirs were full on May 26th, so that the fact that an excess of water was pumped into the district prior to that date cannot be regarded as having any bearing on the subsequent scarcity. It is, however, clear from Mr. Binnie's figures that an excess of water, amounting to 213,000,000 gallons, or less than five days' supply, had been pumped into the district in the month of June. Where that water was drawn

from will have to be considered when we deal with the evidence given by the Water Company in their defence.

Finally, evidence was given on behalf of the Company to the effect that although it had not been necessary to repair any mains belonging to the Company after the middle of April, and although the constant service supply had been resumed throughout the district since September 8th, the daily delivery of water during September did not exceed the normal average, an amount equivalent to about 35 gallons per head of the population. Bryan, 2412.

In our view these facts prove that the scarcity in July and August was not to be accounted for in the manner suggested by Mr. Binnie. Bryan, 2453, 2462.

On behalf of the East London Water Company it was contended that the scarcity of water in July and August 1895 was due to the following circumstances:—

- (a.) Exceptional waste beyond the waste of ordinary years; owing—(1) to the unavoidable delay in repair of fractures in the consumers' pipes brought about during the unusually long and severe frost of the previous winter, and (2) to an excessive amount of garden watering during the hot month of June.
- (b.) An unprecedented drought in the Lee valley, which occurred during the first six months of 1895, leading to decrease in the volume of the River Lee, and to consequent abnormal consumption of the reserve supply in the Company's storage reservoirs.
- (c.) Means of storage insufficient to enable the Company to meet the combined waste and deficiency of water noted under headings (a) and (b), owing to the rejection of a Bill promoted by the Company in Parliament in 1893.

The Company further contended that notwithstanding the intermissions in their water service, little or no inconvenience would have been experienced by the consumers if they had been provided with efficient means of domestic storage.

It will now be necessary to deal with these several contentions of the Water Company in detail.

(a.) Exceptional waste beyond the waste of ordinary years, owing—(1) to the unavoidable delay in repair of fractures in the consumer's pipes, brought about during the unusually long and severe frost of the previous winter, and (2) to an excessive amount of gardening watering during the period of drought.

Before considering the evidence given by the Company with respect to the exceptional waste alleged to have taken place in 1895, it will be necessary for us to refer briefly to what may be regarded as the normal waste obtaining within the East London Water Company's district. The average rate of consumption in the East London district may be taken to be equivalent to about 35 gallons per head per day. Of this amount, about 8 gallons per head per day may be regarded as trade supply, leaving 27 gallons per head for domestic purposes. That this total amount per head is excessive is obvious, and is accounted for by the East London Company as due to the excessive carelessness and waste of the population of their district, and also to bad fittings, and to the constant loss of fittings by theft. Bryan, 2539 and 2830.

For the information of the Board, we have, in an appendix, given an extract from the evidence of Mr. Bryan given before the Royal Commission on Metropolitan Water Supply, with respect to waste in the East London Company's district, and the difficulty experienced in dealing with the same in ordinary years. Appendix A.

With respect to the prevention of the "normal" waste, evidence was given before us on behalf of the Water Company to show the difficulty experienced in the East London district in securing any permanent diminution of this waste, partly on account of the carelessness of the people, and partly on account of the unsatisfactory nature of the fittings put in by speculating builders. It was stated that as regards the defective fittings, the Company possessed no power to deal with them until their faults became apparent. In our inspection of the works of the Company we had opportunity of seeing a number of so-called waste-preventing cisterns, and other fittings, which had been removed after having led to much waste.

A clause was included in the Company's Bill of 1893 with the object of securing sufficient and proper fittings, and so preventing waste. This clause, which would have given powers to the Company similar to those possessed by the Manchester and other Corporations, was so strongly opposed by consumers and others, that it was withdrawn from the Bill of 1893, and was not re-inserted in that of 1894.

With respect to the exceptional waste which was alleged to have taken place during the first six months of 1895, evidence was given on behalf of the Company, to show Bryan, 2439-47 and Table.

that the ratio of increase on the normal consumption of the three previous years was not excessive in the East London District as compared with the ratio of increase observed during the same period in the water services of certain districts situate outside London. The percentage of increase in East London during February, March, April, May, and June 1895 was 37, 28, 29, 21, and 18 above the average for the three previous years. The percentage of increase for the same months in Bradford was $13\frac{1}{2}$, $29\frac{1}{2}$, $19\frac{1}{2}$, 28, and 25 respectively, whilst for Sheffield the figures were 53, 67, 90, 67, and 40 respectively.

According to the evidence already referred to, given by Mr. Bryan on behalf of the Water Company, a large amount of extra waste took place in 1895, owing to fractures in the Company's mains and in consumers' communication pipes that occurred during the frost. The mains, as already stated, were repaired by the middle of April, but owing to the large number of consumers' pipes that were fractured during the exceptional frost, and the comparatively small number of plumbers available to repair these fractures after they had been discovered, considerable delay necessarily took place before the pipes could be put in order again, and it was to this cause primarily that the exceptional waste which prevailed in the summer of 1895 is attributed.

In addition to the waste caused in this way, a certain amount of exceptional waste during May and June was, according to the Company, due to the excessive amount of garden-watering which took place in certain areas of the district, in consequence of the exceptional drought. Evidence was given to the effect that hundreds of cases were discovered in which garden hose-pipes had been left running for 24 hours at a time.

To these two causes the Water Company attributed the persistence of the extra waste which was observed during May and June. Towards the end of June the total amount of water pumped into the district was stated to have been equivalent to 45 gallons per head per day, or 10 gallons per head in excess of the ordinary supply. In consequence of the depletion of their reserves contained in the storage reservoirs (hereafter to be referred to in detail) the Company, on June 28th, cut off the constant service supply for nine hours at night from two-thirds of their district, with the result that the extra waste noted above was at once reduced one-half, the quantity pumped into the district during the two weeks ended July 5th and July 12th, being equivalent to 40 and 39 gallons per head respectively. In consequence of the further depletion of the reservoirs, the supply on July 13th was reduced as regards the portion of the district noted above to three hours a day, with the result that the amount consumed in the district was brought down to from two to six gallons per head below the normal supply, the actual amount pumped into the district during the weeks ending July 19th and July 26th being equivalent to 33 and 29 gallons per head respectively. On July 28th, in consequence of an increase in the amount of water in the reservoirs, the Company turned it on for six hours instead of three, and continued the supply at this rate until August 17th. Although the duration of the service per day was thus doubled, the consumption only increased between two and three gallons per head, the actual amounts pumped in during the weeks ending August 2nd, August 9th, and August 16th being equivalent to 32, 32, and 33 gallons respectively. A still further increase in the hours of service took place on August 17th, from that date until September 8th the service being turned on for 11 hours a day. During this period, though the hours of service were again nearly doubled, the consumption only increased some three gallons per head, the quantity pumped into the district during the three weeks ending August 23rd, August 30th, and September 6th being equivalent to 36, 36, and 37 gallons per head respectively. On September 8th the constant service supply was restored, without it being necessary to pump more than the normal amount of water, namely, 35 to 36 gallons per head per day, into the district.

(b.) *An unprecedented drought in the Lee Valley, which occurred during the first six months of 1895, leading to decrease in the volume of the River Lee, and to consequent abnormal consumption of the reserve supply in the Company's storage reservoirs.*

Evidence with respect to the alleged unprecedented drought was given on behalf of the Water Company by Mr. Symons, F.R.S., the secretary of the Royal Meteorological Society, and by Mr. Bryan.

Mr. Symons proved that in the watershed of the River Lee the first six months of 1895 was a period of most unusual drought; that at two out of the three stations which supply the meteorological observations for this area, the rainfall during that period was the smallest recorded during the 30 years over which continuous observations have been made, that indeed the actual rainfall recorded at the three stations for the first six months of 1895 amounted respectively to only 48 per cent., 67 per cent., and 52 per cent. of the average of the last 30 years.

Bryan,
2402-405.

Bryan,
2429-30.

Letter dated
27th June,
1895, handed
in.
Bryan, 2296.

Bryan, 2297.

Bryan, 2298,
2299.

Bryan,
2300-302.

Bryan,
2303-305.

Bryan,
2453-62.

Symons,
1787-1884.

Mr. Symons further stated that although for shorter periods, such as three months, there had been times of greater drought in 1870 and 1893 than in 1895, the longer period of six months would have a much greater effect on the discharge of the river, and for this length of time no such scant rainfall had ever been recorded in the watershed of the River Lee as that of 1895. Symons, 1869-84.

The evidence of Mr. Symons with regard to the exceptionally small rainfall in the Lee Valley during the first six months of 1895 was corroborated by Mr. Bryan, who gave in addition evidence with respect to the effect of the drought on the discharge of the river. He showed that on May 26th the discharge of the River Lee was 43,209,000 gallons, whereas on the following day, May 27th, the discharge fell off 10,000,000 gallons, and continued to decrease steadily until the middle of July. The average daily discharge of the river throughout the month of June was only 24,300,000 gallons, and by July 13th it had decreased to 22,000,000 gallons. Bryan, 2241-43. Bryan, 2251-56. Bryan, 2257-63.

We may here note that the average draw from the River Lee is 57,900,000 gallons a day, namely, 30,000,000 gallons by the East London Water Company, 22,500,000 by the New River Water Company, and 5,400,000 by the Lee Conservancy Board for navigation purposes. In view of the decrease noticed above, it is clear that the demand that must have been made during this season of drought on the storage resources of the Water Company was very great indeed. As a matter of fact, as has already been observed, the storage reservoirs of the Company had become half emptied by June 28th, and it was only by placing the greater part of their district on the intermittent system that the Company were able to avoid a catastrophe.

(c.) *Means of storage insufficient to enable the Company to meet the combined waste and deficiency of water noted under headings (a) and (b), owing to the rejection of a Bill promoted by the Company in Parliament in 1893.*

The question of the amount of storage required by the East London Water Company was very fully gone into before the Royal Commission on Metropolitan Water Supply, and in order to make the subject quite clear here, it is necessary to explain that although the East London Water Company has larger storage than any of the other London water companies; having, in fact, storage equal to about 15 days supply to their district, compared with 14·2 days supply in the case of the Chelsea Company, and stores varying from 7 days to 1·8 days only in the case of the other London Water Companies, their position is entirely different from that of Companies drawing their principal supplies from the Thames. The discharge of the Thames being always sufficient to meet the draw on it, the water companies having ample power to procure a supply from that source, need storage merely to tide them over any temporary breakdown of machinery or appliances which may occur. The discharge of the Lee, on the other hand, though at times in excess of the draw on it, is liable at other times to fall very short of the demand on it as, for example, this year, and, as a consequence, the East London Water Company require large storage to equalize, in a measure, the flow of the river. For this reason the Royal Commissioners, when referring in their report to the capabilities of the different companies, are careful to add, in the case of the East London Companies' take from the River Lee, the words "with storage reservoirs"—a proviso not necessary to allude to in the case of the other companies.

The available capacity of the existing storage reservoirs of the Company amount to 741,000,000 gallons, and evidence was given on behalf of the Company to the effect that for several years past the Company had felt the danger of the insufficiency of their present storage; that in 1890 they were so convinced of the necessity and urgency of increasing that storage that they at once began to take steps to do so; that by the end of 1891 they had found a site for the necessary reservoirs, and had completed negotiations for the purchase of a lease in perpetuity of 90 acres of land, and that shortly afterwards they obtained six acres more, and that in the autumn of 1892 they had made all their arrangements and came to Parliament for a Bill to enable them to carry out the works. That Bill, as is well-known, was thrown out by Parliament at the second reading, and a large amount of evidence was brought forward, and a number of documents were put in to show the action of the London County Council with regard to this Bill, both in 1893 and 1894, but we do not propose to go into the merits of the case that the Water Company bring against the London County Council. We content ourselves with the remark that events have justified the demands of the Company for more storage and more pumping power, and after the speech made in the House of Commons by Mr. Mellor, the Bryan, 2315 24, 2803-808.

Bryan, 2313,
2314 and
2339-45.

Chairman of Ways and Means, in which he said that the House would "incur considerable responsibility," if it refused to send the Bill to a committee, the responsibility for the want of this storage in 1895 cannot justly be saddled upon the Water Company. In the evidence given by Mr. Bryan, the failure of the Water Company to maintain their constant service supply this year was attributed to the unprecedented drought in the Lee Valley and the consequent small discharge of the river, but he stated that had the Company obtained their Bill in 1893 they would by the middle of January this year have had 200,000,000 gallons additional storage at the Racecourse reservoir, as well as additional pumping power capable of raising from the chalk 3,000,000 gallons a day, and with these they could have maintained their constant service, and the drought would not have been felt by their consumers.

Our inspection of the works of the Company, commenced since the passing of their Act in 1894, satisfied us that Mr. Bryan was justified in his statement that the enlargement of the capacity of the Racecourse reservoir, giving 200,000,000 gallons more storage, and the provision of additional pumping power capable of raising 3,000,000 gallons a day could have been completed in January 1895 had the Bill of 1893 passed.

Tuckwell,
2900-18.
Anstey,
2919-33.

In support of the contention of the Company that notwithstanding the intermissions in their water service, little or no inconvenience would have been experienced by the consumers if they had been provided with sufficient means of domestic storage, two witnesses were called, one of whom was an owner of some 50 houses in Walthamstow; and the other an estate agent, who had the management of 409 houses situate in nine different districts supplied by this water company. Both witnesses gave evidence to the effect that the houses referred to had cisterns, and that throughout the interruption of the constant service not a single complaint had been received from any one of the occupiers. Evidence was also given by Mr. Bryan to the effect that under the ordinary pressure of the water in the East London district, a $\frac{1}{2}$ -inch pipe would discharge enough water to fill a 50-gallon cistern in less than a quarter of an hour.

From a consideration of the evidence that was brought before us, we are of opinion that the necessity of suspending the constant supply service in the metropolitan area comprised in the district of the East London Water Company, and in the district of the Leyton Urban District Council, was forced on the Water Company by the unprecedented drought in the Lee Valley during the first six months of this year (1895) following on an unusually long and severe frost, which had caused such extensive fractures to lead pipes that they could not be repaired fast enough to prevent exceptional waste of water. Further, that the East London Water Company were hampered in dealing with the above difficulties by the want of the additional storage and pumping power that their Bill of 1893 would have given them had it passed into law at that time.

We would also note under this heading that in our opinion the inconvenience experienced by consumers was much aggravated by the want of proper means of domestic storage.

II.—THE EFFECTS OF THE DEFICIENT SUPPLY AS REGARDS THE PUBLIC HEALTH.

With respect to this branch of our inquiry, evidence was given on behalf of the Vestries by the Medical Officers of Health for Hackney, Poplar (part of), Limehouse, Bethnal Green, Mile End, and for St. George's-in-the-East. Evidence was also given by a number of Sanitary Inspectors to prove that the scarcity of water had led to an increase in the number of complaints with regard to stopped drains, &c.

The contentions of the Medical Officers of Health taken as a whole were to the effect that the death-rate from all causes, and from diarrhoea and allied diseases, in their respective districts during the period of water scarcity in July and August 1895 exceeded the rates for the Registration County of London for the same period, and that such excessive death-rates were due to the conditions induced by the scarcity of water. It was, however, generally admitted that both the general and the diarrhoeal death-rates in the sanitary districts comprised within the area of the East London water supply were as a rule higher than the rates which obtained in the Registration County of London. Two of these officers gave death-rates for corresponding periods of previous years, and it will be useful to refer to these in detail. Dr. Rogers, Medical Officer of Health for Limehouse, stated that in the five weeks ended August 17th, 1895, the period of greatest scarcity, the death-rate from diarrhoea and allied diseases in Limehouse was 8.1 per 1,000 as against a rate of

Rogers,
486-98.

4·6 per 1,000 in the Registration District of the County of London. For corresponding periods in each of the two previous years the figures were as follows:—

1893, Limehouse, 6·2; London, 2·8.

1894, Limehouse, 2·3; London, 2·1.

Upon taking the diarrhoeal death-rate of London in each instance as equivalent to 100, we find the proportion between the diarrhoeal rates for Limehouse and London to be as follows:—

In 1893 as 221 to 100

In 1894 as 110 to 100

In 1895 as 176 to 100

thus showing a distinctly lower proportional excess in Limehouse in the period of scarcity in 1895 than in the corresponding period of 1893 when there was no scarcity of water.

Dr. Taylor, Medical Officer of Health for Mile End, also gave statistics with respect to the diarrhoeal death-rates which obtained in Mile End during the five weeks ended August 17th, 1895, and during corresponding periods of the two previous years; these figures were as follows:—

1895	-	Mile End	6·8	London	4·6
1894	-	"	3·1	"	2·1
1893	-	"	4·2	"	2·8

Dealing with these statistics in the same manner as we have with those for Limehouse we find the proportion between the diarrhoeal rates for Mile End and London to be as follows:—

In 1893 as 150 to 100

In 1894 as 148 to 100

In 1895 as 142 to 100

thus showing a lower proportional excess in Mile End in the period of scarcity in 1895 than in corresponding periods of the two previous years when there was no scarcity of water. None of the Medical Officers of Health were able to cite special prevalence of any given disease as due to the deficiency in the water supply. Evidence in general terms was given both by the several Medical Officers of Health and by the Sanitary Inspectors as to the increase during the period of scarcity of the number of complaints with respect to stopped drains, &c., but in only two instances were comparative figures given professing to be in support of these statements. Dr. Wharry, Medical Officer of Health for Hackney, put in a table showing the list of complaints received of the existence of foul smells and choked drains in dwelling houses in Hackney, during May, June, July, August and September, 1895, from which it would appear that 84 complaints as to these matters were received in May and June, a period when there was a plentiful supply of water, as against 79 complaints made in July and August, the period of scarcity. And Mr. T. W. Johnson, Sanitary Inspector for Limehouse, stated that in July, 1894, 11 cases of stopped drains were recorded, whilst in July, 1895, there were 25, or more than double the number.

Table, p. 32,
evidence.

Dr. Wharry, of Hackney, gave evidence which showed the worthlessness of certain statistics which had been published in the public press with respect to the mortality in the Eton Mission District of Hackney. The statement which had appeared in the press was to the effect that in the Eton Mission District in one week the death-rate had risen to 71·5 per 1,000 above that of London; Dr. Wharry stated that the weekly death-rate for this particular district never rose above 59 per 1,000, and this occurred in a population of 7,500 only. As to this we may note that 10 deaths in any one week in a population of 7,500 would give an annual death-rate of upwards of 69 per 1,000.

Wharry,
1130-38,
1149-55.

On behalf of the Water Company evidence with respect to this branch of our inquiry was given by Dr. Orme Dudfield, Medical Officer of Health for Kensington, and by Dr. W. R. Smith, Medical Officer to the London School Board and Medical Officer of Health for Woolwich.

Dr. Smith's evidence was to the effect that in July and August, 1895, diarrhoeal diseases were exceptionally prevalent in districts situate without, as well as in districts comprised within the area of supply of the East London Water Company; that the death-rates, from all causes, and from diarrhoea, were in the East London area in 1895, as in other years, generally in excess of the corresponding rates in the Registration County of London, and that the death-rates from diarrhoea in the East London District during July and August, 1895, the period of water scarcity, had not shown a higher proportionate excess to the rates in the Registration County of London

than in the same months of 1893, a period when there was no scarcity of water, but a period of somewhat similar meteorological conditions to that of 1895.

In proof of these contentions Dr. Smith handed in a large number of tables, to one of which, No. VI., we propose to refer with some detail. In this Table, which is based on the returns of the Registrar-General, the death-rates from all causes and from diarrhœa are given for the Registration County of London; for certain groups of districts arranged according to their source of water supply; and for the several sanitary districts within the East London Water Company's metropolitan area of supply for the months of June, July, and August, 1893, 1894 and 1895.

From this table it appears that the death-rates from *all causes* in London and in the East London Water Company's area were as follows:—

In June	1893	London	20·0,	East London	23·7,	or as	100:118
	1894	„	15·6,	„	17·5,	„	100:112
	1895	„	14·9,	„	18·7,	„	100:125
In July	1893	„	21·7,	„	24·8,	„	100:114
	1894	„	16·1,	„	19·2,	„	100:119
	1895	„	21·0,	„	26·4,	„	100:126
In August	1893	„	20·1,	„	23·2,	„	100:115
	1894	„	16·0,	„	18·5,	„	100:116
	1895	„	16·8,	„	20·2,	„	100:120

From these figures it would appear that in June, 1895, a period when there was no scarcity of water, the general death-rate was proportionally much higher in East London as compared with the Registration County of London than during similar periods in the years 1893 and 1894; that this proportionate excess was practically the same during July, and that it began to decline during August, both being months of scarcity.

With respect to *Diarrhœa* the figures are as follows:—

June	1893	London	1·7,	East London	2·2,	or as	100:130
	1894	„	0·1,	„	0·1,	„	100:100
	1895	„	0·5,	„	0·7,	„	100:140
July	1893	„	2·8,	„	3·9,	„	100:139
	1894	„	1·2,	„	1·6,	„	100:133
	1895	„	3·7,	„	5·1,	„	100:138
August	1893	„	2·0,	„	2·5,	„	100:125
	1894	„	1·4,	„	1·7,	„	100:121
	1895	„	1·8,	„	2·0,	„	100:110

From these figures it would appear that in June, 1895, when there was no scarcity of water, the diarrhœal death-rate was much higher in East London as compared with the Registration County of London than during similar periods in the years 1893 and 1894; and it is to be observed that in July and August, 1895, the diarrhœal death-rate as compared with that of London was actually less in proportion to those reached in the year 1893.

It would thus appear that as regards the area of the East London Water Company as a whole, no evidence is to be obtained from the mortality statistics with reference to either deaths from all causes or from diarrhœa to show that the rates were deleteriously influenced by the deficient water supply in July and August.

With respect to the several sanitary districts, it will not, we think, be necessary to comment in detail, but in the following Table, compiled from Dr. Smith's Table VI., we give the proportion which the rates for July and August, as to all causes, and as to diarrhœa during 1893, 1894 and 1895, of the several sanitary districts comprised within the metropolitan area of the East London Water Company bore to the rates for the same period in the London Registration County. The rate for London being regarded in each instance as 100.

TABLE showing, for the months of July and August in each of the years 1893, 1894, and 1895, the relation of the General and Diarrhoeal death-rates of the Sanitary Districts comprised in the Metropolitan Area of the East London Water Company to the General and Diarrhoeal death-rates of the Registration County of London, the latter being taken as a constant 100.

District.	Year.	All Causes.	Diarrhoea.	District.	Year.	All Causes.	Diarrhoea.
Hackney -	1893	92	97	Limehouse -	1893	151	148
	1894	87	110		1894	147	39
	1895	89	114		1895	169	109
Shoreditch -	1893	119	165	Mile End -	1893	111	143
	1894	117	172		1894	120	131
	1895	117	144		1895	139	153
Bethnal Green -	1893	116	136	Poplar -	1893	118	136
	1894	116	91		1894	119	69
	1895	120	134		1895	120	122
Whitechapel -	1893	127	94	East London water area.	1893	114	132
	1894	137	139		1894	117	127
	1895	146	72		1825	123	124
St. George's - in - the - East.	1893	155	192				
	1894	196	400				
	1895	185	172				

From this table it appears that, although in five of the eight sanitary districts the death-rate from all causes bore a higher proportion to the general death-rate of London during the period of scarcity in 1895 than during the corresponding period of either of the two preceding years, yet in two only of the eight sanitary districts (Hackney and Mile End) did the diarrhoeal death-rate bear a higher proportion during the period of water scarcity to the diarrhoeal death-rate of London than had obtained in corresponding periods of one or other of the two preceding years.

In concluding our comments upon this branch of the inquiry, whilst we would point out the difficulty of avoiding fallacies in drawing inferences from vital statistics over short periods of times. We are of opinion that however grave the inconvenience that has resulted from the scarcity of water in the area of the East London water supply during July and August 1895, there is no evidence to show that it had detrimentally influenced the public health of the districts involved.

III.—THE MEANS WHICH SHOULD BE ADOPTED WITH A VIEW OF PREVENTING A RECURRENCE OF ANY SUCH DEFICIENCY.

With regard to this head of our inquiry we do not think that much need be said. The conditions presented by the year 1895 were very exceptional. An unprecedented drought following a most unusually severe frost created difficulties not likely to be exceeded in the future, and it may be assumed, for purposes of calculation, that a maximum strain was this year put on the resources of the Company. We have already stated that by January 1896 it is expected that the works now in progress in connexion with the Racecourse reservoir and the additional pumping plant will be completed. These works will give an additional storage capacity for 200,000,000 gallons, as well as power to obtain an additional 3,000,000 gallons a day from the Chalk. In addition to these works other reservoirs, under the powers given by the East London Water Act, 1894, are in course of construction, which will finally increase the present storage of the Company to 1,200,000,000 gallons, an amount equivalent to some 27 days average supply. Under these circumstances we consider that, when Parliament passed the Act of 1894, they furnished the East London Water Company with powers sufficient to prevent the recurrence of a deficiency of water in their district until such time, at any rate, as the population to be supplied shall have again outgrown the provision made.

On behalf of the Water Company it was urged that if powers were given to them with regard to fittings similar to those conferred upon a number of corporations in the country it would be possible very materially to reduce in the future the waste which ordinarily takes place within their district.

Incidentally we would here refer to the advantage to the consumer of having a small storage of water in every house. It was shown that, throughout this scarcity, persons occupying houses provided with cisterns suffered no inconvenience. No doubt ill-designed and badly-placed house cisterns are open to objection from a health point

of view, and nothing could be further from our intention than to advocate any return to the old defective cisterns with their moveable wooden covers, but we do advocate the provision of properly designed cisterns. By a properly designed cistern we mean a cistern which shall be so constructed as to exclude alike the possibility of the entrance of dirt from the atmosphere and the accumulation of any deposit from the water itself, whilst at the same time the water in the cistern is under the same pressure as the water in the main itself; in other words, the cistern that would satisfy us is merely a local enlargement of the water main. Such a cistern is, in our opinion, subject to none of the objections commonly urged against the use of cisterns. Under the best arrangements there must be times when short periods of interruption of a constant service will occur, and at such times the want of water for domestic purposes, for flushing waterclosets, sealing water traps, &c., is calculated to lead to conditions injurious to health, which should not be allowed to exist, and which a proper use of really efficient cisterns would guard against.

With respect to the contention advanced on behalf of the Vestries, that the real remedy for the defects in the Water Company's arrangements which resulted in the scarcity of the water supply in East London during July and August 1895, is to be found in sweeping away the Water Companies altogether, and transferring all their works to the hands of a public authority, we think that the question thus raised is not one for us to consider here, and that it does not come within the scope of this inquiry.

In conclusion, we may briefly summarize the results of our consideration of the evidence placed before us in this inquiry.

I. That the scarcity of water in the East London Water Company's area during the summer of 1895 was due to the following causes:—

- (a.) Exceptional waste, beyond the undue waste of ordinary years, of water owing
 - (1) to non-repair of fractures in the consumers' pipes brought about during the unusually long and severe frost of the previous winter; and (2) to excessive garden watering during the drought in May and June.
- (b.) Decrease in the volume of the River Lee due to the unprecedented drought which occurred during the first six months of 1895.
- (c.) Means of storage possessed by the East London Water Company inadequate to enable them to meet the combined waste and deficiency of water noted under headings (a) and (b).

We would also note under this heading that in our opinion the inconvenience experienced by consumers was much aggravated by the want of proper means for domestic storage of water.

II. That although the scarcity of water undoubtedly gave rise to considerable inconvenience and hardship there is no evidence to show that it had any appreciable deleterious influence upon the public health within the area of the East London Water Company.

III.—(a.) That steps have already been taken by the East London Water Company which should in our opinion afford sufficient storage of water to meet any deficiency in the supply of water within their district for many years to come.

(b.) That for the protection of the consumer against unavoidable temporary intermissions of the supply, we consider that there would be distinct advantage in having properly designed means for storage of water in houses.

We append the following papers—

- A.—Extract from Mr. W. B. Bryan's evidence before the Royal Commission on Metropolitan Water Supply.
- B.—Transcript of shorthand notes of the evidence taken at the inquiry.
- C.—Letter from the London School Board.
- D.—East London Water Bill 1893, and correspondence thereon.
- E.—Memorandum with respect to the Company's obligation to supply water for
 - (a) domestic purposes, (b) trade purposes, and (c) public purposes.
- F.—East London Water Works Acts, 1853 and 1867.

We have the honour to be,

Sir,

Your obedient servants,

WALTER DUCAT,
FRED. W. BARRY.

APPENDIX A.

EXTRACT from Mr. W. B. BRYAN'S evidence before the ROYAL COMMISSION ON
METROPOLITAN WATER SUPPLY.

881. You have based your gross amount of water, that you think you may be called upon to supply for the next 40 years, upon the assumption that you will require to supply 33 gallons per head per day?—About that, yes.

882. You think that a safe amount to estimate for your district?—I think it is an excessive amount, but I have had to estimate it as I found matters. The fittings and everything in the East End of London are in such a wretched state, and we give a universal constant supply.

883. Is the whole of your district on the constant supply?—The whole of it in the County of London, and 98 per cent. out of it. We have only a few supplies in the wealthiest part of our district, at Buckhurst Hill and Woodford, which are not. The whole County of London is on the constant, and has been for years, and the whole of West Ham, East Ham, and all those neighbourhoods. It is only just the wealthiest part of our district which is not, about a couple of thousand houses.

884. One other question, by the way?—Do you find that the constant supply increases the amount per head per day?—Very much indeed.

885. In that, I think, your experience is different from that of most others?—Yes, our experience differs and our population differs very much, I am sorry to say.

886. Have you a staff for checking waste?—Yes, a very large staff—over 30 inspectors.

887. Do you find a difficulty in their carrying on their work?—Not so much difficulty as the absolute carelessness of the poorer classes in using the water. The practice in the East End of London in washing clothes is not to use a little labour and soap, but to put them under the tap and leave the taps running for a couple of days. We have a great many meters to ascertain the consumption in some districts, and it runs as high as 70 gallons per day in some districts. Whenever the inspectors go and find these taps running, the people say, "Oh it has only been turned on a few minutes." Frequently I have seen taps running as I passed along the railways on several consecutive days. I have sent the inspector, and in each case he has been told, "Oh, the tap has only been turned on a minute or two." We try every means; we have Deacon's meters, and we have Siemen's meters; we do everything we possibly can, and some landlords help us, but they are quite powerless with the class of tenants they have to deal with.

888. Is there a waste at nights?—Yes, a very great waste.

889. In the dead of the night?—Yes; I should like just to give one instance of a district of about 4,500 inhabitants; this has been isolated for testing purposes very carefully. We take diagrams to ascertain the exact flow of water during every instant of the day. The inspectors go round, serve the notices, do all they can to check waste, and the night line is got down to a very moderate extent. In another week the night line is equal to the day line again. We have gone so far as this in the last three or four years, that my Company, instead of serving notices for repairing taps, put in new leathers quite free of cost—we have found that does a great deal of good—rather than worry them with notices. We have done that at our cost, but it seems almost a hopeless condition of things in some parts of the East End of London. I think I should like to say that that is the reason that I have kept my estimate so high as 33 gallons.

[Minutes of Evidence taken before the Royal Commission on Water Supply, p. 27.]



3

Application to the Board on behalf of the London County Council to alter and amend and add to certain of the regulations made by the Water Companies of London under the Metropolis Water Act, 1871.

TO THE RIGHT HONOURABLE H. CHAPLIN, M.P., PRESIDENT OF THE
LOCAL GOVERNMENT BOARD.

SIR,

I HAVE the honour to report that I held an Inquiry into the above application, at the Westminster Guildhall, on the 31st October, 1895, and the 1st, 4th, 5th, 6th, 7th, and 8th November, 1895, and inspected various buildings, where water fittings, referred to at the Inquiry, are in use, on the 8th, 9th, 11th, 12th, and 13th November, 1895, accompanied by Mr. Rogers Field on behalf of the London County Council, and by Mr. Collins, Engineer of the New River Water Company, on behalf of the associated Water Companies.

At the Inquiry—

Mr. Freeman represented the London County Council.

Mr. Pember, Q.C.

Mr. Cripps, Q.C., M.P.

Mr. Rickard

} represented the eight associated London
Water Companies.

A transcript of the shorthand notes taken at the Inquiry is put in, and I do not therefore propose to epitomise the whole of the evidence taken during the Inquiry, which extended over seven days; but I will briefly refer to the witnesses called, and the principal points affected by their evidence for convenience of reference to the printed notes, and will then review the arguments on both sides, and state the results I arrive at from all that I have heard and seen.

Mr. Freeman opened his case for the London County Council, referring briefly to the making by the Water Companies, under the Metropolis Water Act, 1871, of the Water Regulations of 1872, which were confirmed by the Board of Trade, after an Inquiry held in the same year. He pointed out that those regulations have been in force, without modification or amendment, for 23 years, and that the particular regulation that it is now proposed to alter was not, even at that time, the subject of much discussion. He then traced the history of the agitation, emanating from St. Giles's District Board, regarding the alleged insufficiency of the 2-gallon flush allowed for water-closets, and, through the correspondence, brought the matter down to the application of the County Council for the present Inquiry to make the following four alterations, amendments, and additions to the regulation of the water companies, as follows, viz.:—

- (a.) To amend Regulation No. 21, by substituting the word "three" for "two" before the words "gallons of water at each flush."
- (b.) To add the following definition of "water-closet" to the regulations, viz.: The word "water-closet" in these regulations shall include any "sink used for receiving any solid or liquid excremental filth," and from Regulation No. 20, line 2, to omit the words in parenthesis.
- (c.) To make a regulation which will prevent cisterns being brought into use for supplying water for domestic purposes or for food for beasts so long as they directly supply any water-closet or sink used for receiving any solid or liquid filth.

- (d.) To make a regulation requiring that, in all cases where any premises have a constant water service, one or more taps shall be provided in connection with the rising main for the supply of water for drinking purposes.

In the course of discussion between counsel, on the correspondence read or referred to by Mr. Freeman, it was elicited that in 1892, when the agitation for an increased flush to water-closets was commenced, a circular letter was sent by St. Giles's District Board to all the 42 District Boards or Vestries in London, 18 of which concurred in the suggestions made and joined in the proposed agitation.

Mr. Freeman then called, as witnesses, the following gentlemen, viz.—

Mr. FITZROY DOLL, architect, of 86, Gower Street, a member of the St. Giles's District Board of Works, and of the St. Pancras Vestry, who described the circumstances under which he originated the agitation for a 3-gallon flush to water-closets, in place of the 2 gallons allowed by the Water Regulations of the London Water Companies.

As an architect, he considers 2 gallons is not sufficient to clear the pan of the water-closet and the house drain from it; but he was not aware of the existence of a clause in the Acts of the Water Companies under which they are not liable to give water for flushing drains.

Dr. JOHN FRED JOSEPH SYKES, M.D., Medical Officer of Health for the Parish of St. Pancras, and lecturer on public health at Guy's Hospital, thinks a 2-gallon flush is not sufficient to clear the pan of the w.c., the trap, and the drain; the 2-gallon flush has often, in fact generally, to be repeated, so that the consumption of water with a 2-gallon flush is greater than it would be with a 3-gallon flush; speaks from experience as a Medical Officer of Health, but cannot prove that the health of the public has suffered from the action of the Legislature in restricting the flush to 2 gallons, nor can he give any comparative statement of the relative effects of a 2-gallon and 3-gallon flush.

Mr. WILLIAM JOHN BERRY, surveyor of the estates and valuation department of the London County Council, who has charge of the various artisans' dwellings of the County Council, has compared the effect of the 2-gallon flush, at the Yabsley Street Buildings, Poplar, with the 3-gallon flush at the Beechcroft Buildings, Brook Street, Ratcliffe. At the Yabsley Street Buildings there are 50 tenements, with 50 w.c.'s, and a population of about 170 persons; at the Beechcroft Buildings there are 40 tenements, 40 w.c.'s, and a population of about 174 persons. Mr. Berry considers the fittings in each case to be equally good, the length and size of the down pipe is the same, the water waste preventers and the pans are different in type, but the comparison between the 2-gallon and 3-gallon flush is a fair one; and the result has been that at the Yabsley Street Buildings, with a 2-gallon flush, 21 stoppages of the w.c.'s have occurred in seven months; while at the Beechcroft Buildings, with a 3-gallon flush, not one w.c. has been blocked.

I inspected these buildings with Mr. Rogers Field, Mr. Berry and the respective superintendents on behalf of the London County Council, and with Mr. Collins on behalf of the London Water Companies, and shall have more to say about them later on.

Mr. SAMUEL BUCK, Superintendent in charge of the Beechcroft Buildings, supported Mr. Berry's statement that they have never had any blocks or trouble with the w.c.'s of that building during the past seven months.

Mr. LE BRUN, Superintendent in charge of the Yabsley Street Dwellings, testified to there having been 21 blockages of the w.c.'s there.

Mr. ALEXANDER R. BINNIE, Chief Engineer to the London County Council, explained how, when he was at Bradford, he investigated the matter of the flush necessary for a w.c., with a view to the framing of byelaws for Bradford, and came to the conclusion that 3 to 4 gallons was desirable, and the Bradford byelaws, passed since he left that town, allow 3 gallons. He thinks

nothing less than 3 gallons will suffice, and considers that no more water will be used, as, with a 2-gallon flush, a repetition will be necessary, causing the use of 4 gallons instead of 3 gallons.

Dr. SHIRLEY MURPHY, Medical Officer of Health for London, speaking from long experience, thinks a 2-gallon flush is insufficient; he also approves of the suggested alterations B., C. and D. being made to the Water Companies' Regulations.

At this stage, Mr. Pember objected that the County Council's proposal C., which is, "that no cistern directly supplying any water closet shall be used " for supplying water for domestic purposes or for food for cattle," might very properly form a byelaw under the Public Health Act, 1891, and as such, the Water Companies have no objection to it; but should find no place in the Water Companies' Regulations, which, subject to certain very proper limitations, are framed for the benefit and protection of the Water Companies. When a water company has supplied to a consumer pure and uncontaminated water, their statutory liability has ceased, and any contamination of the water which may take place after it has left the pipes of the company does not concern the company, and should not, therefore, find any place in the Water Regulations. Mr. Pember took the same objection to alteration D. To neither of these alterations in themselves do the Water Companies object, in fact, they consider them proper and desirable; but they should be embodied in the byelaws, not in the Water Companies' Regulations.

Mr. Murphy then continued his evidence, and in cross-examination said the flush should cleanse the pan, the trap, and the drain, and he did not think a 2-gallon flush did this; but he could not give an instance where a 2-gallon flush had failed, so that the waste-preventing cistern could be measured. A 2-gallon flush may meet the requirements of certain fittings which are not bad, but it will not meet the requirements of certain good fittings; and, in practice, an excess of water, to some extent, is necessary to meet reasonable conditions of fallibility. Things cannot all be so exact as not to need a margin, and he thought the 3-gallon flush would give this.

Mr. W. E. GROOM, Sanitary Inspector for the Camberwell Vestry, finds generally that a 2-gallon flush is not sufficient for the w.c.'s in his district, and does not clear the trap. He recently visited some tenement houses in Albany Road, where there are about 300 to 400 suites of rooms. He tested the flush at No. 15 tenement with paper, and the 2-gallon flush failed to clear the pan.

Mr. TAGG, Clerk to the Camberwell Vestry, spoke to the passing of a resolution by his vestry on the subject of the 2-gallon flush, and to the subsequent correspondence which passed on the same topic.

Mr. T. BLASHILL, R.I.B.A., F.S.I., Superintending Architect to the London County Council, said he had designed and built blocks of artisans' dwellings for the London County Council, and had carefully examined and selected the best form of w.c. for such buildings, and did not think that in practice a 2-gallon flush was sufficient. In the factory, a new w.c. in perfect order will act with a 2-gallon flush, but that does not meet the case; in the ordinary conditions of life, 3 gallons are necessary. Sinks for excreta should be considered as w.c.'s. In everyday life some flush cisterns do not work easily unless properly pulled and handled, the w.c. may get a little out of order, too much paper is frequently used, and a 3-gallon flush would overcome little difficulties of this kind.

Mr. KEITH YOUNG, F.R.I.B.A., as an architect of experience in hospital construction, does not think a 2-gallon flush sufficient. With the best form of w.c. in good order, at least $2\frac{1}{2}$ gallons are necessary to cleanse the pan, the trap, and the drain, and excreta sinks should be treated like w.c.'s, and be provided with a $2\frac{1}{2}$ -gallon flush. In certain cases, with a full $1\frac{1}{4}$ -inch down pipe, a 2-gallon flush may suffice, but in sickness it is not sufficient.

Mr. WRIGHT CLARK, a liveryman of the Company of Plumbers, M.S.I., and lecturer on plumbing at the Sanitary Institute and the Polytechnic, thinks

a 2-gallon flush is insufficient, and will not always clear the basin, and some of the best w.c. basins are unable to be used in London because of the insufficiency of water. The best form of pan is that in which the faecal matter can fall into water. In considering a w.c. and its use, many things have to be taken into account, the shape and quantity of paper used is important. The first part of a flush sets the matter in the pan in motion, the second part flushes it through, and the third part is wanted to carry it on; the 2-gallon flush fails in the last. Experiments with 2, 3 and more gallons show, that in w.c.'s, good and bad, the effects of the flush vary, but are always in favour of the 3 gallons over the 2 gallons.

Hospital excreta sinks should be considered as w.c.'s.

Mr. ROGERS FIELD, M.I.C.E., Member of the Council of the Sanitary Institute, has had great experience, and has specially studied sanitary fittings and details. When the Water Companies' Regulations of 1872 were made the question of the amount of flush to a w.c. was not much discussed; the Water Companies proposed $1\frac{1}{2}$ gallons, and others suggested 2 gallons, and the latter was accepted by the Water Companies. At that time the form of the w.c. trap was bad, and flushing was not properly understood or practised, but much change has taken place since 1872. About the time of the Uppingham School Inquiry, Mr. Field made a number of experiments; he tried a 2-gallon flush, with a $1\frac{1}{4}$ -inch down pipe, and found the result was not satisfactory, and concluded that 2 gallons was insufficient. He then tried $2\frac{1}{2}$ gallons, and increased the size of the down pipe to $1\frac{1}{2}$ inches, but the larger pipe made little difference, and the $2\frac{1}{2}$ gallons was still insufficient; he now always uses 3 gallons as a flush where he can. In schools he considers 3 gallons very necessary; 2 gallons is insufficient for them. He was a member of the Committee of the Sanitary Institute, which carried out certain experiments in 1893, and those experiments showed the advantage of 3 gallons over 2 gallons. In those experiments the 2-gallon flush discharged in 5 seconds, and the 3-gallon in 7 seconds. The same apparatus was used throughout, with varying quantities of water and varying lengths of drain, &c., but many more experiments are wanted. He saw experiments made at the New River Company's offices; the 2-gallon flush there cleared the basin in every case, the time of the discharge of the flush varied from 5 seconds to 10 seconds for the 2 gallons; the w.c.'s were well fixed, the experiments were honestly made, and were reliable so far as they went; but they were too few in number, and only suited to conditions not met with in ordinary life. Pulling the handle, for instance, is important, and a good cistern, if not pulled off properly, will not work well, and the age and incrustation of the pipes and other things make a difference.

These experiments did not alter his opinion that 3 gallons are necessary.

He also saw experiments at the Kent Water Company's Works. In his practice he has found that 3 gallons are necessary to clear the drain, which is important; $2\frac{1}{2}$ gallons did not clear the drain, and did not always clear the pan; 3 gallons always clear the pan and trap. The flush is most important in small properties, and it is there that the 3 gallons are most wanted. A 2-gallon flush precludes the use of some of the best forms of w.c.'s. Where the area of water in the basin is small, a 2-gallon flush may suffice, but in these basins the faeces fall on the basin; increasing the size of the water area improves the basin in this respect, but more water is needed for flushing it, and nine times out of ten a 2-gallon flush will not do it, so that basins of this pattern cannot be used. The nominal 2-gallon flush is often short of 2 gallons, and for this and other reasons a 3-gallon flush is wanted. Slop sinks should be flushed like w.c.'s. In the experiments at the Sanitary Institute the w.c. used was a good common short hopper basin with a 2-inch seal. A 2-inch seal is rather deeper than one often finds, and the deeper the seal the more difficult to flush, but the difference in flushing is not great.

The experiments at the water companies' works were satisfactory, but such experiments are not as reliable as ordinary house experience.

Dr. W. YOUNG ORR, Medical Officer of Health for the Wandsworth Board of Works, stated that the Wandsworth Board unanimously passed a resolution that the flush to a w.c. should be not less than 2 gallons, or more than

3½ gallons. He thinks 2 gallons is not sufficient to clear the trap, which becomes foul, and does not clear the drains, if improperly laid; the flush should be 3 gallons. He had not known a well-laid drain to fail with a 2-gallon flush, but he had known a badly-laid drain to fail, and 3 gallons would flush it better than 2 gallons.

Professor W. H. CORFIELD, M.A., M.D., F.R.C.P., &c., Medical Officer of Health for the District of St. George, Hanover Square, thinks a 2-gallon flush is insufficient, whether the w.c. pan be good or bad, and that in all cases a 3-gallon flush is necessary. The better forms of w.c.'s require 3 gallons. Real experience is more valuable than any experiments, as artificial conditions are not the same or so varied as real life. The flush should clear the pan, the trap, and the drain. Where 2-gallon flushes are used special flush tanks in the drains are necessary, and they use more water. He has ordered or recommended a good many hundreds of these automatic flush tanks in London.

Dr. L. PARKE, Medical Officer of Health for Chelsea, attended this Inquiry at the request of the Metropolitan Branch of the Incorporated Society of Medical Officers of Health, who had had before them the recommendations of the London County Council as regards Regulation No. 21 of the Metropolitan Water Supply. He studied the question of the flush to w.c.'s with reference to the alterations to be made at the London Hospital, Whitechapel, about three years ago. At that time all the w.c.'s in the hospital were renewed. Short-hopper w.c.'s were adopted, with a 3-gallon flush. With these w.c.'s a 2-gallon flush is not sufficient to clear the trap, the water area in the basin is large, and the sides of the basin are not fouled. A 2-gallon flush may answer with a w.c. having only a 1-inch seal; but with a 1½-inch seal, which is safer against anti-syphonage, a 3-gallon flush is necessary. A 1¼-inch down pipe is as good, or better, than 1½ inch. The Association he represents here think a 3-gallon flush necessary, and all medical officers of health in London are of the same opinion. The Association has been in existence some 20 or 30 years, but did not move in this matter until the London County Council started the agitation.

Professor HENRY ROBINSON, M.I.C.E., Professor of Civil Engineering at King's College, London, thinks a 2-gallon flush insufficient to keep the drain clear, and automatic flush tanks are often recommended in London; w.c. basins vary; a 2-gallon flush may suffice for one type, and not for another. You cannot fix the type of w.c. to be used, so practically a 2-gallon flush is insufficient. No experiments can be relied on alone; practice is different. Drains are not perfect in many ways, and these affect the results. Houses having no baths have little flush, and these are the ones that want it most. He thinks 3 gallons is wanted for a flush. The difference in the consumption between a 3-gallon and 2-gallon flush will not be in the same ratio. The 3-gallon flush will use more water, but the 2-gallon flush has often to be used twice. More water is wanted for defective house drains.

This closed the evidence for the London County Council.

On behalf of the associated London Water Companies, Mr. Cripps called:—

Mr. E. M. EATON, Chief Water Engineer to the Sheffield Corporation, and connected with that office for 26 years, said a constant service supply was introduced in Sheffield in 1870, when the waterworks belonged to a company. The waterworks of the company were acquired by the Corporation in 1887, but the regulations of 1870 are still in force, with only one alteration, *i.e.*, the introduction of a 2-gallon syphon flush to w.c.'s. This alteration was made on 19th June, 1889, and is in force now. A 2-gallon flush is found eminently satisfactory, and is never complained of. A 2-gallon flush is distinctly sufficient if the w.c. pan has a good flushing rim, a 1¼-inch down pipe, and sufficient height of cistern. The height of the cistern should not be less than 4 feet 3 inches to 4 feet 6 inches, for a 1¼-inch pipe. If the height is less than 4 feet 3 inches, the pipe had better be 1½ inches. The

type of w.c. pan, and the form of the flushing rim, make an essential difference. There is no better w.c. than the old-fashioned short hopper cottage basin, which is cheap, simple, and durable, and as effective and perfect, as any known. The w.c. flush is not intended for the house drain, which should not be taken into consideration at all in connection with it. The w.c. flush is required to cleanse the basin and the trap, and remove all matter in the soil pipe to the house drain. The type of w.c. basin wants regulating more than the quantity of the flush. With a proper basin, a 2-gallon flush is ample, and to give a 3-gallon flush would be a waste of 50 per cent. of water, which is important, and should not be thought of lightly. The regulation for a 2-gallon flush in Sheffield has not been altered since 1870. Dr. Pole reported on this subject to the Board of Trade in 1872, and the case then was fought out in public before the justices, and a 2-gallon flush has always been found satisfactory since then. In Sheffield, Mr. Eaton inspects houses as to the efficiency of the w.c., he sanctions the type of w.c. to be used, and water is not supplied to a house unless the w.c. basin is in accordance with the regulations. The regulations do not prescribe any particular basin, and many patterns are in use. If the flush in Sheffield failed to answer, or left foul matter in the pan, he would certainly hear of it from the owner, and from his 14 inspectors. Mr. Berry's evidence that a 2-gallon flush does not answer in his buildings is important, but needs investigation. Actual practice is preferable to experiment. A 3-gallon flush would be a waste of water, which is an important objection. A 2-gallon flush may occasionally require repeating, and to that extent would cause loss of water, but he had never known it to fail and cause a stoppage, without the introduction into the w.c. of some improper extraneous matter. The w.c. pan, the trap and the soil pipe should be cleared, and a 2-gallon flush does all this.

Mr. ERNEST COLLINS, M.I.C.E., and 15 years Chief Engineer to the New River Company, said his company supplies water to about 160,000 houses. Before the regulations of 1872 were made there was no limit to the amount of water to be used in a w.c.

In 1872, the question was whether $1\frac{1}{2}$ or 2 gallons should be allowed for the flush, and 2 gallons were decided on. At that time, a syphon box was not known or used, and the valve had to be held down all the time to obtain the full discharge. Now, syphons are in general use, and the full 2 gallons is discharged at once. The w.c. pans then in use did not flush as well as the modern pan, so that the 2-gallon flush to-day is much more effectual than it was in 1872. The flushing apparatus has also been improved, but many nominal 2-gallon flushing cisterns do not discharge the full 2 gallons; some do not give more than $1\frac{1}{4}$ -gallon flush. With a good w.c. pan, having a proper flushing rim, with a full $1\frac{1}{4}$ -inch down pipe, and a proper height of cistern, a 2-gallon flush is sufficient, both by experiment and in practice; 4 to 5 feet height of cistern, and a quick flush of, say, 4 seconds, is necessary, and with these conditions a 2-gallon flush will cleanse the pan and the trap; but the drain is not under the water company. The water company has nothing to say to the size or the fall of the house drain, and is not responsible for it. A single 2-gallon flush will not clear all the house drain, but subsequent flushes will do so. The slop water and sink water assist to clear the house drain, and the bath water gives very important assistance. The combination w.c. is now largely adopted, and in these the flush is used for urine also, and this has increased the consumption of water. His company has 60 inspectors, who report any obstructions of the w.c. Such reports are usually received during frost, when there is no water to be got; but when everything was in proper order, and the w.c. fairly used, he had never had a stoppage reported where a 2-gallon flush was used. Where blocks had been reported they could generally be accounted for by a napkin, or a bundle of linen, or something of that kind, being thrown into the w.c. Improper use of the w.c., or inferior apparatus, may cause obstruction in the w.c., but with proper use and appliances a 2-gallon flush suffices. If a 3-gallon flush be substituted for the present 2-gallon flush the increase of water, when the change is made universal, will amount to 2,400,000 extra gallons of water daily in the district of the New River Company only, and in the whole

metropolitan water area to about 12,000,000 gallons daily, assuming that the w.c. is flushed $7\frac{1}{2}$ times a day on an average, a very serious matter.

Mr. Collins thinks the regulations should be altered so as to give the Water Companies some control over the house fittings to be used, powers similar to those now given to the Corporations of Birmingham, Norwich, Manchester, Bradford, Sheffield, and many other large towns. The present inquiry is entirely due to the use of bad fittings. The Companies require an alteration of the regulations to enable them to examine and test all water fittings, not only for their own protection against waste, but for the protection of the public. The New River Company do what they can without statutory regulations, and test and stamp fittings. All the difficulty in this matter of the flush is due to faulty fittings. Many cisterns only give $1\frac{1}{4}$ -gallon flush, and hundreds of down-pipes are less than $1\frac{1}{4}$ inches diameter; but the water companies are bound to supply water to the houses unless waste of water can be shown. With proper conditions, a 2-gallon flush is sufficient, and need not be repeated, though some people use a second flush from habit; with an ill-designed or badly constructed w.c. a second flush is necessary, whether the flush be 2 gallons or 3 gallons. Where a 2-gallon flush fails because the fittings are bad, a flush of 3 gallons, or any other reasonable quantity, would also fail. If the sanitary authorities would insist on the use of the full 2 gallons it would be better, and save complaints. A uniformity of w.c. is not required, but certain necessary conditions might be insisted on. The experiments conducted by the Sanitary Institute did not correspond in their conditions with ordinary practice. In these experiments they emptied the trap and pipe each time, whereas in everyday life the first flush is helped by the second, and the soil pipe, as a rule, is very steep or vertical. The proposed alteration to a 3-gallon flush is not to be made retrospective, but the County Council byelaws would make it applicable to the renewal of w.c.'s in old houses, so that in a few years the change would be universal throughout all London, and the change of fittings would cost about 4,800,000*l*.

Mr. BRYAN, Chief Engineer of the East London Waterworks Company, has examined many small houses with 2-gallon flushing cisterns and has always found the 2-gallon flush sufficient where the fittings are good. The alteration to 3 gallons for a flush would increase the consumption of water 4 gallons to 6 gallons a head a day for both w.c. and urinals. The remedy for existing shortcomings is to be found in proper fittings. A 2-gallon flush is insufficient only when the fittings are bad; to introduce a 3-gallon flush will be wasteful. In Bradford it is sheer waste. He thinks the one extra gallon in the flush will cost 4 to 6 gallons a head a day, as the combination w.c. is used as a urinal by both sexes.

Mr. R. E. FARRANT, Deputy-Chairman and Managing Director of the Artizans', Labourers', and General Dwellings Company, Chairman and Managing Director of the Middle-Class Dwellings Company, and Deputy-Chairman and Managing Director of the Rowton Houses, stated as follows, viz.:—The Artizans' Dwellings Company have built, and keep in repair, 5,048 cottages and shops, renting from 6*s*. a week upwards. Many of the cottages are designed for two families, and have separate sanitary accommodation. Besides the cottages, there are block buildings, containing 1,489 tenements, and 155 shops, these blocks are six and seven storeys high. On the books of this company there are 7,000 direct tenants, besides lodgers, and there are in the buildings 7,420 w.c.'s, fitted throughout with 2-gallon flush cisterns. These w.c.'s are perfectly satisfactory, and no complaints have ever been made as to the flushing being insufficient. Any failure of one of these w.c.'s must have been brought to notice at once, as the company keeps its own staff of men, and does all its own repairs. The population in the 7,000 tenements would be about 40,000. The pattern of w.c. generally used here is a short hopper basin, Doulton's Fig. E. This basin has a straight back, so that the faecal matter falls well into the water, and is an improvement on the old pattern. The w.c.'s are not all Doulton's Fig. E., some are Fig. D., which are not quite so good, have not such a good flushing rim, and the back is not so vertical; but a 2-gallon flush answers well with both basins.

The company's workmen erect the w.c.'s, and see to all connections. These block buildings have dust shafts, without which things are likely to be thrown down the w.c., potato peelings and such like.

The Middle Class Dwellings Company have flats in Belgravia and Bloomsbury, 221 flats in all, but 30 of them are not yet completed or occupied. Of these flats, 147 situated at Ridgmount Gardens and Gordon Mansions, and offices in Southampton Street, are fitted with 2-gallon flushing cisterns; 44 at Buckingham Palace Mansions are fitted with 3-gallon cisterns, and the pans and traps in all cases are the same, there is no difference in them whatever, and the 2-gallon flush is just as satisfactory as the 3-gallon flush. There has never been a stoppage in any of the w.c.'s but one, in Bloomsbury, where a scrubbing brush accidentally fell in and caused a block. At Rowton House there is accommodation for 484 lodgers, and the house is always full and overflowing, 50 to 100 are turned away nightly. It is a great success. On a wet Sunday all the lodgers will be in the house till mid-day. There are 40 w.c.'s in the house, but 16 of these are night closets, locked up in the day time, when only 24 are available; so that there is one w.c. to about 20 men in the day-time, and the w.c. would be more used than any ordinary private or hotel w.c. would be. These w.c.'s are fitted with Wynne's Acme 2-gallon flush cisterns, and during the three years, nearly, that the house has been open, they have been perfectly satisfactory, and have given no trouble. Any failure or complaint must have come to notice, as the company does all its own repairs. In fitting up their w.c.'s the company follow the Water Company Regulations and the byelaws strictly; but, in some of the old w.c.'s the down pipe is only 1 inch, but even then the 2-gallon flush does well, and is invariably sufficient. All our w.c.'s and fittings are of the best, and are kept in good order and repair. In Ridgmount Gardens, where the house drain is 80 feet long with a flat grade, there is an automatic flush tank, filled from the baths. In the block tenements, new tenants often do not use the flush, and throw things down the w.c., and require to be taught how to use the appliances given them; but in cases of misuse, a 3-gallon flush would be no better than a 2-gallon flush, which acts perfectly.

Mr. J. W. GRAY, M.I.C.E., M.I.M.E., for 29 years Engineer to the Birmingham Waterworks, and now retired from active work, though still consulting engineer for Birmingham, said the Birmingham byelaws for preventing waste of water were made in February, 1887, and confirmed by the Local Government Board in May, 1887. Byelaw 15 provides that every w.c. cistern, other than a double valve cistern, shall discharge not more than 2 gallons at each flush, and Mr. Gray thinks that, where a w.c. is properly constructed and fitted, the 2-gallon flush is sufficient, and he knows of no case where the 2-gallon flush has proved insufficient in Birmingham.

Mr. J. W. RESTLER, M.I.C.E., M.I.M.E., Chief Engineer of the Southwark and Vauxhall Water Company, said his company supplies about 127,000 houses, and a population of about 900,000. Wherever a 2-gallon flush has been found insufficient, it has always proved to be due to the w.c. itself, or to the fittings. It would be better if the water company had some control over the fittings. Out of the 42 vestries and authorities written to, 18 have written to the London County Council, assenting to the change from a 2-gallon to a 3-gallon flush; before this agitation was started, there was no public demand for the change, and only a few cases where architects have asked for it, for special reasons. The flush to a w.c. should clear the pan and trap, and 2 gallons does this. The house drain is flushed by the baths and house water, which amounts to eight or nine times the w.c. water. Mr. Binnie says a 3-gallon flush would use less than a 2-gallon, as the latter has to be used twice; but Mr. Restler thinks this would only occur in about 5 per cent. of occasions of use, so that the consumption of water would be 210 gallons against 300. The combination w.c. adds to the use of water, as a urinal should use only one gallon for a flush. With proper appliances a 2-gallon flush is sufficient, the substitution of a 3-gallon flush will entail a waste of water, amounting to 2,000,000 gallons a day in this company's district. The London Water Companies ought to have the same power over

water fittings that Sheffield and other corporations have, many of which took over their waterworks and their regulations, from private companies.

Mr. EDWIN J. WHITE, C.E., and Director of the Lambeth Brass and Iron Company, and a specialist in the design of waste preventers and fittings, considers the success of a flush depends entirely on the w.c. and fittings in use. With a proper basin and trap, a clear $1\frac{1}{4}$ -inch down-pipe, a height of cistern not less than 4 feet 6 inches, and a full 2-gallon cistern, discharging in 5 seconds, the flush will be sufficient. The time of discharge of the flush is important; a 3-gallon cistern, discharging slowly, will not flush the pan properly. The short hopper w.c. is the best type known; it should have an open flush rim, without slots, the water area should be $4\frac{3}{4}$ inches diameter, holding 3 pints of water. In such a pan faecal matter will seldom touch the sides, and the flush would remove it if it did. In such a case a 3-gallon flush will be no better than a 2-gallon flush, which will do all that is wanted. A 2-gallon flush will clear the pan, trap, and soil-pipe, and part of the house drain. The syphon cistern is the best, as one is sure of the whole flush. When a w.c. gets stopped, it is generally the fault of the drain, in which the cement often obstructs the flow, and in such cases a 3-gallon flush would be no better than a 2-gallon. A good trap and soil-pipe never get stopped from the quantity of a 2-gallon flush, but from other causes. When the conditions are proper a 2-gallon flush will suffice, and a 3-gallon flush would be no better.

Mr. MATTHEW WILSON HARVEY, Engineer of the West Middlesex Waterworks Company, thinks that where the w.c. and fittings are proper a 2-gallon flush is ample. Nothing special in the pan or trap is necessary. If the down-pipe is too small, and other fittings bad, a 3-gallon flush will not give satisfactory results. A 2-gallon flush will clear the pan, the trap, the soil-pipe, and part of the house-drain. The house-drain should be ventilated, but, if long, a 3-gallon flush would not clear it without the bath and house water. He thinks the combination w.c. uses more water, but speaks without statistics. The extra 1 gallon to the flush would entail the use of about 1,000,000 gallons of water extra daily in this water district, the population of which is 584,748. Mr. Harvey does not know of any case where, with proper fittings, a 2-gallon flush has been found insufficient.

Mr. JAMES PULLEN, of 73, Penton Place, owns model dwellings in Amelia Street, Iliffe Street, Peacock Street, Crampton Street, Manor Place, Penton Place, and Thrush Street, in Walworth; in all about 70 blocks, containing 600 tenements. In these are about 500 w.c.'s, all short-hopper basins, with good flushing rims, $1\frac{1}{4}$ -inch down pipes, and 2-gallon syphon flush cisterns. Some of these have been in use 10 years, but not one of them has ever been blocked by excreta only. There have been blocks caused by house-flannels, hearth-stones, scrubbing brushes, and bundles of wood; but a 6-gallon flush would not have contended with these things. For all the legitimate uses of a w.c. a 2-gallon flush is quite sufficient.

Mr. PARKES, Engineer to the Lambeth Waterworks Company, with 23 years' experience, thinks, with proper appliances, that a 2-gallon flush is sufficient. The conversion of the 2-gallon flush to a 3-gallon flush would increase the consumption of water in the Metropolitan area of his district, which has a population of about 497,000, by about 2,000,000 gallons a day, and add to the consumption of water in the whole Metropolis about $17\frac{1}{2}$ millions of gallons a day.

Major LEWIS ISAACS, F.R.I.B.A., A.M.I.C.E., and Surveyor to the Holborn Board of Works, has been the architect of many large buildings and hotels, as well as of some artisans dwellings. With 40 years' experience, he thinks that a 2-gallon flush, where the w.c. and fittings are correct, is sufficient to clear the pan, trap, and soil-pipe, and part of the house-drain. The height of the flushing cistern should be 5 feet or more for a $1\frac{1}{4}$ -inch down-pipe; where a height of 5 feet cannot be got, the down-pipe should be $1\frac{1}{2}$ inches. The w.c. water forms only a part of the water in the house-drain. Houses renting at 30l. to 35l. a year have baths nowadays; the w.c. water comes

to about 8 gallons a head out of 30 gallons a head a day. The house-drain should be properly laid, and the Sanitary Authority should see that it is; and if all other fittings were similarly looked after, the 2-gallon flush would suffice. The sewers of the low-lying parts of London, like Westminster, are affected by the back flow, and any increase of sewage in these sewers would aggravate an evil now much complained of. The flush of a w.c. should cleanse the pan, trap, and soil-pipe, and where the appliances are correct a 2-gallon flush will do this. There are cases where the 2-gallon flush fails, and when that is so, it is due to mal-user of the w.c.

Mr. JOHN PHILLIPS, Chief Surveyor of the Westminster Court of Sewers in 1846, and having 50 years' experience, is practically certain that a 2-gallon flush is amply sufficient to clear the pan, trap, and soil-pipe, and a part of the house-drain, which would act and flush better if made egg-shaped, instead of circular in section.

Mr. ALBERT GILL, District Engineer of the Chelsea Waterworks Company, says most of the new w.c.'s in his district are of the combination type, with 2-gallon syphon flushing cisterns. In the poorer parts of the district, such as Fulham, many of the flushing tanks do not give a full 2-gallon flush, but the flush is not complained of as insufficient. Where everything is correct, the 2-gallon flush is ample. The combination w.c. increases the use of water. If a 3-gallon flush be given instead of the 2-gallon the increased consumption of water in this district will be about 1,500,000 gallons a day, or about 12 per cent. increase.

Mr. E. K. BIRSTALL, M.I.C.E., M.I.M.E., a waterworks engineer of experience, for 10 years engineer to the Oxford Corporation Waterworks, put in a book of the water regulations of 120 selected towns. He thinks a 2-gallon flush sufficient, and has always used it. If a 2-gallon flush failed, it would probably be found that the 2-gallon cistern did not discharge the full 2 gallons, or if the fault did not lie there, there would be something wrong with the apparatus, which 99 times out of a 100 would not be overcome by a 3-gallon flush. In a case at Oxford a drain was badly laid, and a 15-gallon flush from a bath failed to make it work well; but when relaid correctly, a 2-gallon flush was found sufficient. Out of 100 or 150 water regulations, all but two fix the flush for a w.c. at 2 gallons. Bradford has lately made regulations, allowing 3 gallons. At Sheffield, two justices heard much engineering evidence, and fixed the flush at 2 gallons. In 1888, after an inquiry at Portsmouth, where much discussion took place, a 2-gallon flush was decided on. Where the fittings, &c. are correct, 2 gallons are sufficient, but in London the fittings are often not good. The syphon flushing cistern, which is of great assistance in the flush, was not known in 1872.

Mr. A. DICKSON, Secretary of the Kent Waterworks Company for 23 years, thinks that, when fittings, &c. are correct, a 2-gallon flush is most efficient and satisfactory. The flush should clear the pan, trap, soil-pipe, and part of house-drain. He invited the Committee of the Sanitary Institute to witness some experiments at the Kent Waterworks Company's offices. Experiments with only $\frac{3}{4}$ -inch down-pipe and $1\frac{1}{2}$ -gallon flush were satisfactory, and he thought the Committee of the Sanitary Institute were satisfied that, with fair conditions, a 2-gallon flush was sufficient. The water consumers of the company have not approached them for a larger flush. The 2-gallon flush may prevent the use of some forms of w.c. Some are so large that 3 gallons is insufficient, and an unnecessary quantity of water has to be used. The Kent Waterworks Company have required 3-gallon cisterns to be adjusted to discharge only 2 gallons. A good w.c. that will work with 2 gallons of flush is as good as one that requires 3 gallons. A 2-gallon flushing cistern is faulty if it does not discharge 2 full gallons, and there are hundreds such in use now, but there is no proper supervision over fittings. Supervision should be in the hands of the water companies.

Mr. EDMUND YATES, a builder in Walworth Road, owns cottage property in which there are some 3,500 to 4,000 w.c.'s. His tenants would complain if their w.c. arrangements went wrong, but there have been no complaints,

and the 2-gallon flush is in universal use. He used to have 1-inch down-pipes, now has $1\frac{1}{4}$ inch. He uses a short hopper w.c., with good flushing rim, and has always found the 2-gallon flush satisfactory. He opened one of his house-drains that had been in use 20 years, and found it quite clear; the fall in the drain was good, about 1 in 40. His cottages are of varying sizes, 6, 8, and 10 roomed. Some of the 8-roomed cottages have bathrooms.

Mr. R. W. PEREGRINE BIRCH, M.I.C.E., M.I.M.E., and M.S.I., spoke of the haste with which the report of the Committee of the Sanitary Institute was adopted by the Council of the Institute for the convenience of the London County Council. He then went, at considerable length, into the experiments made by the Sanitary Institute, which he thought inconclusive, and said if they would spend 1,000*l.* in following up these experiments for 12 months, they could tell the public a great deal that was more valuable, in respect to house drainage and water closets, than what they have now told them about the desirability of a 3-gallon flush.

Dr. W. ROBERTS, Medical Officer of Health for Deptford, where the number of houses is 15,756, and population 121,887 by the census of 1891. This population is mostly of the artizan class. Dr. Roberts thinks that with a good w.c. and fittings a 2-gallon flush is sufficient, and that no amount of flush will make bad fittings give satisfactory results. He has five inspectors, whom he meets daily, and they all agree with him in thinking a 2-gallon flush sufficient, if properly applied.

Mr. HERBERT SARGEANT BARHAM, a builder of Blackheath, who has built about 40 houses on St. John's Park estate, rather a good class of house, some with one, and some with two w.c.'s., and some of them having bathrooms, had in his older houses a good form of long hopper w.c., but in his more modern houses has used a short hopper w.c., with a $1\frac{1}{4}$ -inch down-pipe, and a 2-gallon flush cistern, which is in every case sufficient. He has never had but one blocked w.c., and that occurred about 18 months ago, from a large piece of soap being emptied down the w.c. by accident. He would certainly have been complained to, and called in, had any other stoppages of the w.c. occurred, as Blackheath people are particular. He sees no necessity for increasing the 2-gallon flush.

Mr. WILLIAM LEWIS was for 32 years caretaker of the Improved Industrial Dwelling Company's tenements in Crossfield Lane. There are 155 tenements, and a population of about 400. There are 155 w.c.'s, all flushed with a 2-gallon flush, which keeps the pans very clean. There have been no obstructions in the w.c.'s during the past 12 months, and there never have been any blockages, except from articles thrown in, such as a box-lock or bundle of wood.

A 3-gallon flush would be no better than the present 2-gallon, which does all that is wanted, and is sufficient.

Mr. JOHN WARD, an inspector under the Kent Waterworks Company, has in his district Armitage Cottages, West View and Collaston Cottages, artizans' dwellings in East Greenwich, belonging to the London County Council. He inspected a number of these tenement dwellings, found their w.c.'s provided with 3-gallon flush cisterns adjusted to discharge 2 gallons, and asked the tenants if they had any complaints to make of the w.c.'s. In all cases they had no complaints to make, and the w.c.'s were clean and satisfactory. He inspected about 20 tenements. The superintendent said they had had trouble with the drain after the frost. He also visited some County Council buildings in Armada Street, Deptford, where the w.c.'s have similar fittings, and there, too, the occupants did not find any fault with their w.c.'s. He likewise visited some buildings in Armada Street, opposite the County Council buildings, belonging to the Provident Building Society, where they have short hopper closets and flushing cisterns discharging less than 2-gallons, but there were no complaints of the flush being insufficient. He also visited Miles's Buildings, and Dacre Buildings, Lee, all with 2-gallon flush cisterns, and heard no complaints.

Mr. JAMES MOORE has for 26 years been secretary to the Improved Industrial Dwellings Company, which has 45 estates in various parts of London. The Company owns about 5,200 or 5,300 dwellings, and manages some 400 or 500 tenements for other owners, say between 5,000 and 6,000 dwellings in all, with a population of about 30,000 persons of the artizan class. Every tenement has its own w.c., fitted with a 2-gallon flush, and all the buildings have dust shafts, so that there is no temptation to the people to throw potato peelings, &c., into the w.c. None of the tenants have complained of the insufficiency of the 2-gallon flush to their w.c.'s. The tenants are all of the working class, and some of them are very rough. New tenants are shown how to use the w.c. and other fittings, and, as a rule, do use them fairly.

At this stage of the Inquiry the measurements of the eight flushing cisterns to the w.c.'s in the Westminster Guildhall were put in as follows:—1 gallon $6\frac{1}{2}$ pints, 1 gallon $5\frac{1}{4}$ pints, 1 gallon $6\frac{1}{2}$ pints, 1 gallon 6 pints, 1 gallon 7 pints, 1 gallon 7 pints, 1 gallon $5\frac{1}{2}$ pints, and 1 gallon $6\frac{1}{2}$ pints; average about 2 pints short of the full 2 gallons. This building contains the courts and offices of the Middlesex County Council.

Professor WILLIAM ROBERT SMITH, Barrister, F.I.C., Professor in King's College, Medical Officer of the London School Board, Medical Officer of Health for Woolwich, and President of the British Institute of Public Health, and member of the St. Giles's Board of Works, states that, given a proper pan, a proper trap, and a proper down-pipe, full bore throughout, he is confident that a 2-gallon flush is quite sufficient; it will cleanse the basin, trap, and soil-pipe. Combination w.c.'s have increased the consumption of water, as they are used for urinating purposes; anything beyond a 2-gallon flush will be really in the nature of waste. He was not present at the meeting of the St. Giles's Sanitary Committee on the 2nd November, 1892, was not a member of that committee. As Medical Officer of Health for Woolwich, has very large experience of the effects of flushing cisterns.

As Medical Officer to the London School Board, he knows that the 2-gallon flush to the w.c. in the Hart Street Board School acts most efficiently. The letter from the St. Giles's District Board came before the Woolwich District Board, but they decided to take no action, and no responsibility in the way suggested against a 2-gallon flush, as it was the general feeling of the Woolwich Board that 2 gallons was amply sufficient.

Mr. FARQUHAR GOLLAM, Chief Inspector of the Woolwich District of the Kent Waterworks Company, with an experience of 21 years in Oxford, Sheffield, Glasgow, and Aberdeen, thinks that, where a 2-gallon flush fails to flush and cleanse a w.c. properly, the failure must be due to defective fittings or extraneous obstruction, in which case 10 gallons would not ensure a perfect flush. Stoppages are generally traceable to things thrown into the w.c. or drain by servants, spoons and forks, broken glasses, and such like. For all ordinary proper use a 2-gallon flush to a w.c. is sufficient, if the fittings are good. When the water supply at Sheffield was in the hands of a company the 2-gallon flush acted well, but the company there had power over the fittings, and the Sheffield Corporation now have the same powers and regulations. The water fittings in Sheffield are greatly superior to those in common use in London.

Sir FREDERICK BRAMWELL, Bart., President of the Institute of Civil Engineers, &c., &c., said that, in his judgment, an increase of the 2-gallon flush was not only not necessary, but would be harmful. A 2-gallon flush, properly used, is sufficient; to make it a 3-gallon flush would be waste. By the Regulations of 1872 the flush to a urinal is limited to 1 gallon, but since the introduction of the combination, or lift-up seat, w.c., this has become a urinal with a 2-gallon flush, now proposed to be made 3 gallons, and the augmentation of the flush from 2 gallons to 3 gallons will be extremely important in the way of the waste of water. This frequent flush to the w.c., as a urinal, has probably been lost sight of by many people, who have thought of this extra gallon being wanted for the flush of the w.c. after the ordinary

major evacuation once a day, but the proposed waste of water is much more serious than this, and, in a population of 5,000,000, will throw a very grave responsibility on the purveyors of the water, and on those also whose duty it is to deal with the foul water in the sewers. He then referred to the inquiries into, and the discussions on, the 2-gallon flush at Sheffield and elsewhere.

He said London is the most completely water-closeted town in England. The flush to a w.c. should cleanse the pan, the trap, and the soil pipe; and if a 2-gallon flush, with proper fittings, did not do this it should be increased, but not otherwise. When he wrote to the "Times," to the effect that this increase to the flush would entail an extra consumption of water, amounting to 5,000,000 gallons a day in London, he had thought over the question only very roughly, and had not considered the effect of urination; but in going into the calculations more carefully he was horrified at the figures. If the increase of flush were made universal, it would certainly cost 10,000,000 gallons of water a day. He believes the increase would be 4 to 5 gallons a head of the population above the age of infancy, or, say, of two-thirds of the whole population, which would give 10,000,000 to 15,000,000 gallons as the daily increased consumption of water.

That closed the evidence on behalf of the water companies.

Mr. Freeman, for the London County Council, with the consent of Mr. Pember, recalled Mr. Berry, to clear up certain points in connexion with the failures of the flush to the w.c. in the Yabsley Buildings, and he called two other witnesses to give further particulars regarding certain buildings of the London County Council, which were referred to by Mr. Ward in his evidence.

Mr. WALKER, Superintendent of the County Council's cottage buildings in East Greenwich, said there are 78 buildings, occupied since May, 1894, by a population of about 400. He kept a diary from November, 1894, to November, 1895, 12 months, during which time he recorded 21 stoppages of the w.c.'s. The population is rather difficult to deal with, but is improving; the first tenants were not clean, and used the w.c. one after another without using the flush, but they have greatly improved. No doubt some of the earlier stoppages were due to the slovenliness of the people themselves.

Mr. SATCHWELL, Superintendent of the County Council's buildings at Hughes' Fields, said there are there 134 tenements, of which about 100 are occupied by a population of about 450. From the 7th April to the 14th October the number of occupied tenements has gradually increased from 37 to 100. The average number of tenements occupied, and consequently of w.c.'s in use, would be about 70. During the six months from the 7th April to the 14th October a daily record of the w.c.'s has been kept, and the stoppages noted. During these six months 9 or 10 w.c.'s have been stopped, and about 12 inspection chambers have been blocked with paper and faecal matter. Blocks from extraneous substances have not been counted in the above. The tenants are of the poorer class, and are very troublesome. Many of them do not use the flush at all, which of course soon leads to a stoppage of the w.c., and this, too, would stop the inspection chamber. If the people do not pull the flush, it would not matter if the cistern held 2 gallons, or 3 gallons, or 60 gallons.

This practically closed the evidence, and Mr. Pember then made his address for the Water Companies, and Mr. Freeman for the County Council.

I have had this case very fully and fairly argued before me on both sides by very able Counsel, and every facility was afforded me of making such inspections as I thought necessary. In these inspections I visited a number of the model dwellings, both in high blocks and cottages, belonging to the London County Council and other owners referred to at different times during the inquiry, and saw a few experiments made at the New River Water Company's offices, being accompanied throughout by Mr. Rogers Field, on behalf of the London County Council, and by Mr. Collins, on behalf of the Associated London Water Companies.

Mr. Freeman, in opening his case for the London County Council, said his application was to make the four following amendments and additions to the Regulations made by the London Water Companies in 1872, viz. :—

(a.) To amend Regulation No. 21 so as to read as follows :—

“Every water-closet cistern, or water-closet service box, hereafter fitted or fixed, in which water supplied by the company is to be used, shall have an efficient waste-preventing apparatus, so constructed as not to be capable of discharging more than three gallons of water at each flush”—(the real alteration being to substitute “three” for “two”).

(b.) To amend the regulations by the addition of the following definition of “water-closet,” viz., the word “water-closet” in these regulations shall include any “sink, used for receiving any solid or liquid excremental filth,” and from Regulation No. 20, line 2, to omit the words in parenthesis.

(c.) To make a regulation which will prevent cisterns being brought into use for supplying water for domestic purposes or for food for beasts so long as they directly supply any w.c. or sink used for receiving any solid or liquid filth.

(d.) To make a regulation requiring that, in all cases where any premises have a constant water service, one or more taps shall be provided in connexion with the rising main for the supply of water for drinking purposes.

Mr. Pember, on behalf of the water companies, said that, as regards the proposed amendment (b), if the definition be carefully worded so as to include only such sinks as are used for receiving any solid or liquid excremental filth, the water companies would offer no objection.

As regards the proposed addition (c) the water companies have no objection to it as a byelaw of the sanitary authorities; as such, it would, no doubt, be very proper, but it in no way concerns the water companies, whose regulations are made by them to guard them against waste of water, or its contamination while still in their pipes before delivery to the consumer. After a water company has delivered water into the cistern of a consumer, it can be no longer responsible for contamination, and this proposed addition (c) should form no part of the water regulations.

Again, as regards the proposed addition (d), the rising main in a consumer's own house is his own property, and he can, if he likes, now put one or more taps on it for the supply of his drinking water, and the water companies have no objection to his doing so. It may be a good thing to have a byelaw of the sanitary authorities requiring taps on the rising main in a house, but the question does not concern the water companies in any way, and they object to its being introduced into the water regulations.

From this it will be seen that amendment (b) is accepted by the water companies; the proposed additions (c) and (d) are objected to as additions to the water regulations, and I think the objection is reasonable; but they are not opposed in any way as byelaws of the sanitary authorities, in which form they can be introduced if necessary, and amendment (a) thus remains the main, and only subject of contention.

Now to deal with the arguments on the proposed amendment (a).

It was agreed that the flush to a w.c. should cleanse the pan, the trap, and the soil pipe; but Mr. Freeman was not prepared to admit that it should not also cleanse the house drain. Mr. Freeman contended :—

(1.) That a 2-gallon flush will not always cleanse the pan, the trap, and the soil-pipe, and fails to clear the house drain; he maintains that, though in a factory showroom, with a new and smooth w.c., perfectly erected, and with a perfectly laid drain, a 2-gallon flush might prove sufficient; and the same results may be obtained as the result of experiments, the case in real life is another matter, the conditions are more varied and are different, basins and pipes are corroded and rough, drains are not perfectly laid, and the experience of real life is more to be depended on than theory and experiments,

and, by the test of every-day life, with reasonable allowance for human fallibility, a margin of water in excess is necessary, and 3 gallons is the least that should be allowed for a flush.

- (2.) Mr. Freeman argued that the increase of the flush from 2 gallons to 3 gallons will really cause no appreciable increase in the consumption of water, as the 2-gallon flush, being insufficient, has frequently to be repeated, thus using 4 gallons, where a 3-gallon flush, once used, might have sufficed.

In support of his argument, Mr. Freeman called his witnesses.

Mr. DOLL, an architect, who had known a 2-gallon flush to fail to clear the drain in his own house, and thought 3 gallons were necessary. With a new pipe, 2 gallons might suffice, but in ordinary working it did not, and a second flush of 2 gallons is often necessary. He could not mention one case of a 2-gallon flush, which was complained of, and could be examined. His evidence was general and vague.

Dr. SYKES, Medical Officer of Health for St. Pancras, thought a 2-gallon flush insufficient and required to be repeated. In his experience as Medical Officer of Health in St. Pancras, many of the houses are old, and the down-pipes may be contracted, and so the 2-gallon flush may not be fairly used. He would not say that with a good w.c., having a full $1\frac{1}{4}$ -inch down-pipe, and 6 feet of head to the cistern, that a 2-gallon flush would not suffice. Dr. Sykes's large experience as a medical officer of health would have been valuable had he known the measurements and particulars of the appliances where he had known the 2-gallon flush to fail, but without these particulars his evidence carries little weight.

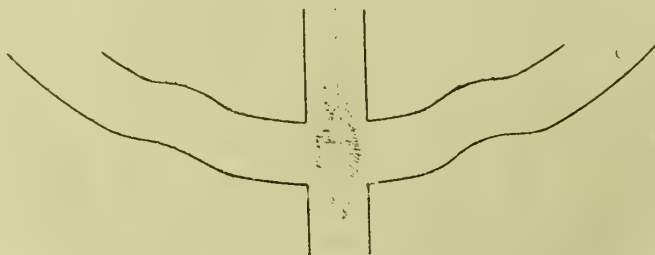
Mr. BERRY, Estates Surveyor to the London County Council, gave actual facts and figures, and on these, Mr. Freeman, who stated that he considered the facts of real life more to be relied on than any theoretical experiments, largely based his case, and these figures must therefore be carefully looked into and examined. Mr. Berry said that at Yabsley Street Buildings there are 50 w.c.'s and a population of 170, and in seven months, during which he kept careful record, there had been 21 blockages of the w.c.'s, or as he put it, 72 per cent. per annum of failures of the w.c.'s. At the Beechcroft Buildings, with 40 tenements and 40 w.c.'s, with a population of 174, there had been no blocks of the w.c.'s. At each of these buildings there are 3-gallon flush cisterns to the w.c.'s, but at Yabsley Street the syphons are adjusted to discharge 2 gallons; at Beechcroft Buildings they discharge the full 3 gallons. The type of w.c. pan used is not quite the same in each case, but in other particulars Mr. Berry thought the comparison between these two buildings was fair, and in the one case, with a 2-gallon flush, they had had 21 failures, a ratio of 72 per cent. per annum of the number of w.c.'s, and in the other case, with a 3-gallon flush, there had not been a single failure. Now, first to consider the actual figures given regarding the Yabsley Street Buildings. There are 50 w.c.'s, and there have been 21 blockages in seven months, which Mr. Berry gives as equal to 72 per cent. per annum of failures, and curiously this percentage was not alluded to in cross-examination. But to arrive at the true percentage of failures, we must not take the number of the w.c.'s, but the number of users of them, and assuming, as I think we may do, that each head of the population used the w.c. once in the day for a major evacuation, we have a population of 170 using the w.c. 210 times (say), in the seven months, *i.e.* $170 \times 210 = 35,700$ users of the w.c., of which 21 blocked, or one failure in 1,700, in itself not a very heavy indictment against the 2-gallon flush, seeing the class of persons who caused this ratio of failures, people who, the superintendents said, frequently used the w.c., one after another, without using the flush at all. These 21 blocks of the w.c.'s must not be thought of as serious obstructions of the w.c.'s requiring the skilled labour of a plumber, or interference with the structural works of the w.c. to remove them; they were merely trifling obstructions, which the use of a plunger, in unskilled hands, removed in a minute. One such failure in 1,700 is, as I said before, not a heavy charge to bring against the 2-gallon flush, seeing the class of people using these w.c.'s.

And even this ratio of failures could probably on investigation have been reduced, as at my inspection we found the flush of one w.c., which was recorded as twice blocked, worked so badly that a woman could scarcely pull it, and a child certainly could not pull it at all. The water company's man thought the flush lever was set badly, and did not pull true. The Superintendent under the County Council thought the lever only wanted oiling; but the fact remained that the flush could not be properly used, and the woman living in the rooms said she had always had great difficulty in pulling the flush.

As the two recorded failures of this w.c. were clearly not traceable to the inefficiency of the 2-gallon flush, but to the faultiness of the fittings, the number of failures should be reduced to 19, instead of 21; and this would give one failure in 1879; and just possibly some of the other failures might have been accounted for had a very careful inspection of each w.c. been made at the time of failure.

But we still have to deal with the comparison between the 2-gallon and 3-gallon flush. Mr. Berry thought the comparison between the Yabsley Street Buildings and the Beechcroft Buildings a fair and good one; but, in my inspection of these buildings, I noted two very important differences, which would fully account for the less perfect success of the one than of the other. At the Yabsley Street Buildings the w.c. in use is Doulton's Fig. E. I had the seal measured, and found it $2\frac{1}{4}$ inches. At Beechcroft Buildings the w.c. in use is the Cliffe's pattern, the seal of which I found, by measurement, to vary from $1\frac{1}{4}$ inch to $1\frac{5}{16}$ inch. This difference in the depth of the seal may seem a small matter, but is quite sufficient to account for the difference in the working of the two w.c.'s, when severely tried by bad usage. In the experiments we made at the New River Company's offices we had a cottage hopper basin with a $1\frac{1}{4}$ -inch seal, and a Doulton's Fig. E. the same as that in use at Yabsley Street Buildings with a $2\frac{1}{4}$ -inch seal. When properly used with a fair charge, both of these basins acted perfectly with a 2-gallon flush, or a 3-gallon flush; but, for the sake of experiment, I tested them with models of faeces and 15 pieces of paper, practically filling the basin with paper. In the case of the cottage hopper basin, with $1\frac{1}{4}$ -inch seal, the whole charge was carried out of the basin each of the three times that we tried it, both by the 2-gallon flush and the 3-gallon flush. In the case of the Doulton's w.c., Fig. E. pattern, with the deeper $2\frac{1}{4}$ -inch seal, the pan was not once cleared by either the 2-gallon or 3-gallon flush, showing that, under unfairly severe conditions of usage, a 3-gallon flush will not necessarily succeed where a 2-gallon flush fails; and showing also that the 1 inch greater depth of seal is quite sufficient to account for the 21 failures at Yabsley Street Buildings, which are not found at Beechcroft Buildings.

In addition to the difference in depth of seal, there exists also a difference in the design of the soil-pipe.



In the Yabsley Street Buildings there is a common down-pipe for two stacks of w.c., the soil pipes from which join in to the common down-pipe at the same point, and at rather a flat incline; so that it is just possible an obstruction might take place at the point of junction. At the Beechcroft Buildings each stack of w.c. has its own separate soil down-pipe, so that no two w.c.'s discharge at one point.

These differences between the Yabsley Street Buildings and the Beechcroft Buildings do away, in my opinion, with all the value of any comparison between them.

Mr. Buck and Mr. Le Brun, the Superintendents, respectively, of the Beechcroft and Yabsley Street Buildings, merely confirmed the evidence of Mr. Berry.

Mr. Binnie, the Chief Engineer of the London County Council, thinks 3 gallons the least that should be given for a flush, and does not think that more water would be used, as a 2-gallon flush often fails and has to be repeated, but he gave no definite facts or figures in support of his opinion.

Dr. Murphy thinks a 3-gallon flush advisable, as a margin of water is necessary to meet human fallibility. This, of course, assumes that a 2-gallon flush provides little or no margin; but it has been shown that, in very many cases, the flushing cisterns do not give the full 2 gallons, and yet answer well, when carefully used.

Mr. Groom, Sanitary Inspector, Camberwell, finds 2 gallons is not sufficient, but his information and experience are rather general.

Mr. Blashill, Architect to the County Council, thinks 2 gallons may suffice for experiments in a model, but is not sufficient in ordinary life.

Mr. Young thinks $2\frac{1}{2}$ gallons is the least that is necessary to clear the house drain.

Mr. Clarke thinks 2 gallons is insufficient, and precludes the use in London of some of the best forms of w.c.

Mr. Rogers Field, whose great knowledge and experience of these matters entitle his opinion to great weight, thinks 3 gallons is necessary, especially for flushing the drain. The 2-gallon flush precludes the use in London of some forms of w.c.

Dr. Orr thinks the flush should be 3 gallons. He has never known a 2-gallon flush fail to clear a good drain, but he has known it to fail in a badly laid drain, and thinks a 3-gallon flush would do better.

Professor Corfield thinks a 3-gallon flush is necessary, and that with a 2-gallon flush the house drain must be separately flushed.

Dr. Parkes thinks a 2-gallon flush may answer with a w.c. having a small seal, but with a deep seal 3 gallons is necessary. I proved by experiment, at the New River offices, that, with proper usage, a 2-gallon flush is sufficient for a w.c. with $2\frac{1}{4}$ -inch seal, which is deep; but with such a w.c., if improperly used, neither a 2-gallon nor a 3-gallon flush will answer.

Professor Robinson thinks a 2-gallon flush is insufficient to clear the house drain, and with 2 gallons you must have a special flush tank to clear the drain. He also thinks certain types of w.c. require more than 2 gallons; and as you cannot fix by Act of Parliament what form of w.c. a man shall use, practically a 3-gallon flush is necessary.

We now come again to a witness who gives facts and figures.

Mr. Walker, Superintendent of the County Council's buildings at East Greenwich. He there has charge of 78 tenements, having the same number of w.c.'s, and accommodating a population of about 400. In the 12 months from November, 1894, to November, 1895, there have been 21 stoppages of the w.c., exclusive of stoppages due to frost. He admitted that the tenants are very rough, and when they first come are very slovenly and dirty, frequently using the w.c. one after another, without using the flush at all.

Now, with a population of 400, and 21 stoppages of the w.c. in 12 months, we have one stoppage to about 6,952 users of the w.c. Can such a result with such a population be quoted as proof of the failure of the 2-gallon flush? One w.c. in this block of buildings was blocked at the time of my inspection (Monday). It seemed that the tenement had been vacated on Saturday, and the tenants went out leaving the w.c. very foul and unflushed. This was not seen to until just as I came round on Monday, when the filth, having set hard, caused a block of the w.c. Perhaps a little more attention on the part of the superintendent might have obviated some of the above-recorded 21 blocks.

The last witness for the County Council was Mr. Satchwell, Superintendent of the County Council's buildings at Hughes' Fields, Armada Street. There are here 134 tenements, opened in April this year, and not yet fully occupied. At first 37 only were occupied; now about 100 are full, with a population of about 450. The average number occupied during the past six months was given as 70, with a population of about 315. In these buildings during the

past six months there have been obstructions in nine w.c.'s and about 12 inspection chambers, say 21 blocks in all; this will give one block or failure in 2,730 users of the w.c.; and Mr. Satchwell says the people are very troublesome, when they first come, and are uneducated to the use of a w.c. They frequently go away leaving the pan foul, and without using the flush, so that it would not matter whether the flush were 2 gallons, or 3 gallons, or 60 gallons.

I have gone very fully into the evidence for the County Council, especially where actual facts and figures have been given, as Mr. Freeman so particularly stated that he depended so much more on the results of everyday practice and experience than on any theory or experiments; and in this he is no doubt right.

On behalf of the Water Companies, I do not think it will be necessary to review all the evidence so minutely.

A number of waterworks engineers were called—Mr. Eaton, Chief Waterworks Engineer of Sheffield; Mr. Collins, of the New River Company; Mr. Bryan, of the East London Waterworks Company; Mr. Gray, of the Birmingham Waterworks; Mr. Restler, of the Southwark and Vauxhall Water Company; Mr. Harvey, of the West Middlesex Waterworks Company; Mr. Parkes, of the Lambeth Waterworks Company; and other engineers of experience, who spoke to their experience of a 2-gallon flush, which they all thought was ample if properly used. These gentlemen spoke from their general experience, and I do not think it is necessary to go through their evidence in detail; but I will, as Mr. Freeman suggested for his own guidance, go more fully into the actual facts and figures of everyday practice in life spoken to by other witnesses.

Mr. Farrant is Managing Director of the Artizans' Dwellings Company, which houses a population of about 40,000 persons, and uses generally Doulton's (Fig. E.) w.c. He has found the 2-gallon flush amply sufficient in these dwellings. He is also Managing Director of the Middle Class Dwellings Company, and, in 147 flats, finds the 2-gallon flush ample and quite as efficient as the 3-gallon flush that has been used in 44 flats in Belgravia. He is also Managing Director of the Rowton House Company. In Rowton House they accommodate 484 lodgers besides staff, say, 500 in all, and finds the 2-gallon flush sufficient there, though the w.c.'s are very much used.

Mr. Pullen owns about 600 tenements, containing some 500 w.c.'s, and has never had one stopped by fair usage, though some have been in use 10 years.

Mr. Yates is a large owner of cottage property, having some 3,500 to 4,000 w.c.'s on his estate, and has always found the 2-gallon flush sufficient, and has had no complaints from any of his large number of tenants.

Mr. Barham, a builder in Blackheath, has built a number of houses there, 40 houses of a good class on St. John's Park Estate, all of which have a 2-gallon flush, which is never complained of, though the occupants of these houses are particular, and would certainly complain loudly if the w.c. in their houses became blocked, or the flush failed in any way.

Mr. Lewis had charge of the Industrial Dwelling Company's tenements in Crossfield Lane for 30 years. There are there 155 tenements, with about 400 tenants, and the 2-gallon flush has always been quite sufficient for all legitimate purposes, though he has had w.c.'s blocked by obstructions, such as a box lock or bundle of sticks, which no flush could be expected to remove. During the last 12 months there has not been one obstruction in any of the 155 w.c.'s.

Mr. Moore has, for the last 26 years, been secretary to the Improved Industrial Dwellings Company, which has 45 estates in various parts of London, containing between 5,000 and 6,000 dwellings, occupied by about 30,000 persons of the artizan and labouring classes. Throughout these buildings the 2-gallon flush has been found quite sufficient, and has never been complained of.

If practical proof of the sufficiency of a 2-gallon flush is wanted, nothing stronger than this evidence put in on behalf of the Water Companies could be given, and this evidence is of a positive and convincing character. The 2-gallon flush has been found sufficient and satisfactory, for a number of years, in thousands of w.c.'s, where its failure, if failure had occurred, must have been

known. It is conceivable that the failures reported by the witnesses for the County Council may have been accidental, one failure in 1,700 users of the w.c.'s. in Yabsley Street buildings, one in 6,952 in East Greenwich, or one in 2,730 in Hughes' Fields, where the tenants are quite new, and only being educated to the use of a w.c., may well have occurred from improper usage, potato peelings or other matter thrown down the w.c., which escaped detection; but the perfect sufficiency of the 2-gallon flush, in thousands of w.c.'s., for a number of years cannot possibly be attributed to accident or coincidence; had a 2-gallon flush been insufficient, the insufficiency must have been made clearly apparent under such an exhaustive trial, and there is no resisting the conclusion that a 2-gallon flush is amply sufficient, if properly used.

With expert witnesses, called to give evidence in favour of a 3-gallon flush, the inference is not unnatural that, if a 2-gallon flush is good, a 3-gallon flush will be better, and it is well to have a margin of safety; but a vague general argument of this sort would be equally applicable were the flush now raised to 3 gallons, and there would be no finality; so that evidence of this nature is worthless, unless it can be shown that the 2-gallon flush gives no margin. This, however, is far from being the case; it was shown that in numberless instances, where a nominal 2-gallon flush is sufficient, the cistern does not discharge a full 2 gallons; in some cases only $1\frac{1}{4}$ gallons, so that, no doubt, with a 2-gallon flush there is some margin, which I think the large number of successful flushes, and the small ratio of failures borne testimony to in this inquiry, prove to be sufficient. And we have no proof that where, under abuse or mismanagement, a 2-gallon flush has failed a 3-gallon flush would have done any better. In the experiments I had made at the New River Company's offices, a tabular statement of which, signed by Mr. Field, is put in, we had the curious experience of finding a 3-gallon flush fail, where a 2-gallon flush had previously proved sufficient; such a result, of course, proves nothing positive; but it tends to show that, adding another gallon of water to the flush, at the expense of the Water Companies, will not ensure the public against the ill effects of their own carelessness or mismanagement.

I think the London County Council failed to prove the insufficiency of the 2-gallon flush, or the necessity of an amendment of the Water Companies' Regulations on this account.

Mr. Freeman, I think, fairly established his point that certain types of w.c.'s will work better with a 3 than with a 2-gallon flush, and that the present regulations practically preclude the use of certain w.c.'s in houses paying their water rentals on rates and not by meter; but as the regulations are suitable to a very large number of patterns of good w.c.'s, it does not seem to me to be just or desirable to alter the regulations all over London, in order to encourage the use of one or two patterns of w.c. which are needlessly extravagant in the use of water.

The evidence being altogether in favour of retaining the present maximum flush of 2 gallons, I do not know that it is necessary to go at much length into the question of the excess of water that would be expended were the flush increased to 3 gallons. The contention on behalf of the County Council is that the 2-gallon flush being insufficient, and consequently having to be frequently repeated, the alteration to a 3-gallon flush, which will not need to be repeated, will really not entail the consumption of any more water. The Water Companies, on the other hand, maintain that the proposed alteration of the regulation to allow of a 3-gallon flush will lead to an increased consumption of water, variously estimated as from 10,000,000 to 17,500,000 gallons a day. Mr. Collins, Engineer of the New River Company, thinks the flush will be used, on an average, about $7\frac{1}{2}$ times a day by all the population (above the age of infancy), entailing an increased consumption of about 12,000,000 gallons a day. Mr. Bryan, of the East London Waterworks Company, thinks the flush would be used from four to six times a day. Mr. Restler, of the Southwark and Vauxhall Water Company, estimates four users a day; and Mr. Parkes, of the Lambeth Waterworks Company, assumes the same average number of users, viz., four, but puts the total extra consumption at 17,500,000 gallons a day. Mr. Gill, of the Chelsea Waterworks Company, thinks five users a day a fair average to calculate on, and estimates that the addition of 1 gallon to the flush will increase the consumption of water

in London by 12 per cent. Sir Frederick Bramwell, who went into the calculation more carefully, estimates the increased consumption at from 10,000,000 to 15,000,000 gallons a day.

The truth, probably, lies somewhere between these extremes. That the increase of the flush from 2 gallons to 3 gallons will increase the consumption of water goes almost without saying. It was given in the evidence that a 2-gallon flush might fail about five times in 100, while a 3-gallon flush would probably only fail once, so that the consumption of water would be as 210 to 303, and this is probably fairly correct, and the increased consumption of water would be in about that ratio. But the number of times that the flush is used, on an average, is, I think, considerably over-estimated by the Water Companies; and I should not expect the alteration of the flush from 2 gallons to 3 gallons to increase the consumption of water in London by more than 5,000,000 to 7,500,000 gallons a day; but even this is a very large quantity of water to use and to add to the sewage, which has to be pumped and disposed of, unless the necessity for it can be clearly shown, and I do not think that, in this case, any such necessity has been established.

I have the honour to be, Sir,

Your obedient servant,

WALTER M. DUCAT.

Whitehall, 10th December 1895.

RECOMMENDATIONS.

In this application of the London County Council to alter, amend, and add to the Regulations of the Metropolitan Water Companies, I recommend that the suggestions made be disposed of as follows, viz.:—

(a.) “To alter Regulation No. 21 to increase the maximum flush to a w.c. “ from 2 gallons to 3 gallons ” be not sanctioned, as the necessity for it is not proved.

(b.) “To add the following definition of ‘water-closet’ to the Regulations, “ viz., the word ‘water-closet’ in these Regulations shall include “ any ‘sink used for receiving any solid or liquid excremental filth,’ “ and from Regulation No. 20, line 2, to omit the words in paren- “ thesis,” be sanctioned, and the Regulations be altered accordingly.

This addition, in itself, is desirable, but is not very pressingly called for, as I believe that such sinks, not being actual water-closets, are very rarely in use, except in hospitals; and in most, if not all the hospitals in London, water is supplied by meter on the lowest scale of charges, and there is thus no restriction on the use of water or the size of flush used. I understand that the Water Companies contemplate applying to the Board shortly to further amend and alter the Regulations; and, if such an application is made, the above suggestion (b.) might stand over until the whole of the alterations of the Regulations that may be found necessary have been decided on.

(c.) and (d.) Not being, properly speaking, Water Regulations, should not be sanctioned as such.

WALTER M. DUCAT.

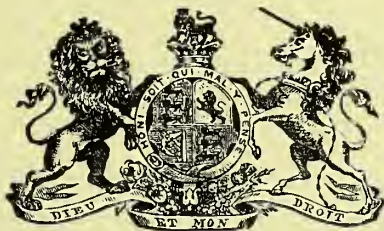
Whitehall, 10th December 1895.

TUBERCULOSIS (INTERNATIONAL CONGRESS).

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COPY of REPORT of the Right Honourable Sir HERBERT
MAXWELL, Bart., M.P., F.R.S., and P. H. PYE-SMITH, Esq.,
M.D., F.R.S., the Delegates of Her Majesty's Government at
the International Congress on Tuberculosis, held at Berlin
on the 24th to the 27th May 1899.

Presented to both Houses of Parliament by Command of Her Majesty



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REPORT of the Delegates of Her Majesty's Government on the International Congress on Tuberculosis, held at Berlin from the 24th to the 27th May, 1899.

LONDON, *June*, 1899.

MY LORD DUKE,

We have the honour to report that, in accordance with Your Grace's instructions, we attended the International Congress on Tuberculosis assembled at Berlin on 24th to 27th ultimo.

The Congress which was opened by His Serene Highness the Herzog von Ratibor in presence of Her Majesty the German Empress, consisted of about one hundred and eighty delegates, appointed by and representing the Governments of different states and Universities, and other public bodies.

Beside these, it was attended by a very large number of individuals who were admitted as members on paying for their entrance.

The proceedings took place in the Chamber of the Reichstag, and consisted of the reading of papers by a number of persons of different nationalities, the majority being Germans, bearing on the nature of tuberculosis, in men and animals, its diagnosis, pathology, preventive and curative treatment. Nothing in the nature of a general discussion in public took place, but no doubt the proceedings when printed will form a valuable *corpus* of scientific opinion, marking the degree of knowledge attained in regard to tuberculosis and the most hopeful means of combating it. We believe, also, that much good will result from the Congress by the prominence given thereby to the subject, and by a general diffusion of information as to the nature of the disease and the precautions which should be taken against it.

Herewith we enclose the Tageblatt, or Journal of the Congress—five numbers—and submit, at the same time, a memorandum by Dr. Pye-Smith on the medical aspect of the results of the Congress.

On Friday, 26th May, we had the honour of being received by the Imperial Chancellor, Fürst zu Hohenlohe Schillingsfürst, who showed much sympathy with the objects of the Congress.

His Majesty the German Emperor was pleased to command the presence of some of the delegates at Potsdam on Sunday, 28th May. Dr. Pye-Smith had left Berlin on Saturday afternoon, before his Imperial Majesty's commands arrived, but Sir Herbert Maxwell, with about fifty other delegates, had the honour of an audience. Both his Majesty the Emperor and her Majesty the Empress evinced a keen interest in the proceedings of the Congress, and all the delegates present were very sensible of the graciousness of their reception.

We cannot refrain from expressing our sense of the great kindness and consideration shown to us by His Excellency Sir Frank Lascelles and the members of the British Embassy, and also by

various members of the German Government. We desire especially to record our obligations to the President of the Congress, his Serene Highness the Herzog von Ratibor. It was a general feeling among the delegates that they owed to his constant attendance and personal exertions the satisfactory and agreeable result of the proceedings.

We remain,

MY LORD DUKE,

Your obedient humble servants,

(Signed) { HERBERT MAXWELL.
 { P. H. PYE-SMITH.

THE LORD PRESIDENT OF THE COUNCIL.

MEMORANDUM BY DR. PYE-SMITH.

It was clear from the great number of members (nearly 2,000), from the character of the lectures delivered, and from the necessary absence of discussion, that the object of the Congress was to interest and instruct—first, medical practitioners, secondly, the official and political classes, and, thirdly, the mass of the people of the German Empire, in the ascertained results of researches into the origin, nature, prevention, and general methods of treatment of tuberculosis.

The addresses were expository and hortative. Their aim was to call attention to well-established conclusions, and to enforce their practical bearing on the endeavour to prevent the spread of tuberculous diseases, and to treat them when present with success.

The most important conclusions were those already recognised by pathologists in this country and elsewhere, and may be thus briefly stated in untechnical language.

1. That consumption, and all other tuberculous diseases, are caused by the presence and multiplication of the specific bacillus discovered by Professor Koch, of Berlin; although other microscopical plants of allied though distinct character are often present in addition to the constant and essential *Bacillus tuberculosis*, and produce modifying and generally injurious effects. (Pfeiffer of Berlin, 2nd day of the Congress, on the Mixed Infections of Phthisis.)

2. That the most frequent and dangerous mode of infection by the specific bacillus in adults is by its admission to the lungs and throat (including both windpipe and tonsils).

3. That the vehicle by which the bacillus is transmitted from a sick to a healthy adult is, in the great majority of cases, the phlegm coughed up. This, in the form of "spray" may occasionally gain entrance to a bystander's throat, and when dried up and turned to dust, it may be inhaled with the air into the lungs. So long as the mucus spat up remains moist, it is, from physical causes, scarcely transmissible. (Flügge, Fränkel, 1st day.)

It is tenacious of life, and of its destructive powers; but is deprived of both, after a short but variable period, by free exposure to the air, by the heat of boiling water or of fire, and by sunlight.

4. That another important vehicle of infection is milk, either occasionally by accidental defilement with moist sputum from a consumptive patient, or frequently by young children drinking the milk of cows affected with tuberculous disease of the udder. (Obermüller on Infection by Butter, 2nd day of Congress.)

The bacillus of tubercle thus conveyed into the mouth may set up tuberculous inflammation, particularly in the tonsils, or it may survive the action of gastric digestion and produce grave disease of the intestines. (Fränkel of Halle, 2nd day of Congress.)

5. That a third, though far less frequent mode of tuberculous infection is by eating meat—*i.e.*, muscle and fat—which is contaminated from tuberculous disease of the lymph-glands and other parts, and has been imperfectly cooked. Other methods by which the skin, for instance, is infected are less frequent, and also less dangerous than those above mentioned. (Virchow, 3rd day of Congress.)

6. That, while it is now proved that the specific bacillus is present in every case of tuberculous disease—whether of the lungs (consumption, phthisis, decline), lymph glands (scrofula), brain (brain fever, tuberculous meningitis), abdomen (tabes mesenterica, consumption of the bowels, tuberculous peritonitis), joints (white swelling, tuberculous synovitis, and suppuration of hip and other joints), bones (caries of the spine, Pott's disease, &c.), and other organs (Addison's disease, &c.)—yet there is no doubt that of the two conditions which always make up a disease (the external disturbance and the internal result of that disturbance), the latter depends on the condition of the host as much as upon the activity of the infecting parasite.

Some specific diseases, like small-pox and syphilis, produce grave symptoms in all but those who are protected, *i.e.*, rendered more or less completely "immune" by a previous attack of the disease—syphilis in the one case, small-pox, or the mild and modified form known as cow-pox, in the other.

Other specific diseases, like pneumonia and diphtheria, appear to be only produced when a certain state of the body is favourable to their development. Indeed, the characteristic microbes of both these diseases are believed to be frequently present in the mouths of healthy persons. The soil, therefore, is as important as the seed. Susceptibility to tubercle as to other infectious diseases varies greatly in different animals: dogs, goats, and horses are "refractory" to tuberculous infection, cattle and swine are more easily affected, while rabbits and guinea-pigs offer exceedingly favourable opportunities for the invasion of the bacillus. So also will the probability of a successful establishment of tuberculous disease in a human host vary according to the age, the health, and the hereditary habit and build of the recipient. Some individuals and some families appear to be as susceptible as rodents, others as refractory as goats.

Tuberculosis, as a condition directly transmitted by inheritance, is extremely rare, though well attested cases of the bacillus and its characteristic effects being present at or before birth have been recorded both in man and in the lower animals. (Löffler, 2nd day.) But the vulnerability (to use Virchow's term) of the body, and particularly of the serum and white corpuscles of the blood—the proneness of the tissues to become the seat of tuberculous disease—varies as much as the vulnerability or proneness to gout.

A child is seldom, or never, born with either of these diseases, but he is often born with less than average power of resistance to the enemy which he is almost certain sooner or later to meet.

For these reasons we cannot throw away the experience which shows that (quite apart from household infection) consumption appears in certain families more frequently than chance can account for. Hence the importance of strengthening the body against the invasion of tuberculosis by wholesome and particularly by fattening food, by increase of the colour and corpuscular richness of the blood, by improved digestion, and by exposure to open air and light. Hence the importance of the general hygienic measures in which this country took the lead from the latter half of the present century.

The result has been the diminution of the number of deaths by consumption in England and Wales by one half, in proportion to the population, during the 45 years from 1851 to 1895. (See Dr. Tatham's Tables compiled for the Royal Commission for 1896 on Tuberculosis. Also Dr. Schjerner on Phthisis in the German Army (1st day), and Dr. Köhler on its Distribution in the General Population (1st day).)

7. That infective tuberculosis in general, and phthisis or pulmonary tuberculosis in particular, is not "catching," in the popular sense of the word. The disease is not conveyed by the breath, nor even by coughing, except as a rare exception, nor is it caught by contact with a consumptive patient, as scarlet fever or measles are caught. In all cases of infectious disease

there must be actual passage of the contagion of the disease from one person to another; but the difference between diseases such as typhus and mumps, which are spread by mere intercourse, and diseases such as enteric fever or pneumonia which are not, is from a practical point of view very great. In the case of phthisis, we may say that it is not the patient, but his expectoration, which is dangerous.

8. The following practical points in the prevention of tuberculosis as a widespread and destructive disease were inculcated by various speakers at the Congress.

A.—The primary importance of free ventilation and wholesome and abundant food. Improvement in the dwellings and the food of the poorer classes in this country, and their increasing cleanliness and sobriety, have not only diminished sickness generally, but directly reduced the number of deaths from consumption until the mortality from this cause is less in London than in any other large city. (It is, however, important to notice that the death-rate of young children from disease of the bowels has little, if at all, diminished. See Sir Richard Thorne's Harben Lectures.)

B.—The prevention of infection of the lungs by the bacillus of tubercle depends chiefly on rational treatment of the sputa of consumptive patients, or rather, for practical purposes, of the sputa of all those affected with cough and expectoration. The phlegm should never be deposited on the ground or on a handkerchief, where it can dry up; it should be kept moist until it can be destroyed by heat, and the vessel used to receive it should contain phenol or some other antiseptic solution.

C.—The prevention of infection by tuberculous milk may be accomplished either by boiling all milk given as food to children, or by inspection of dairies, so as to prevent tuberculous milch-cows being used.

D.—The prevention of infection by meat can be secured by careful and thorough inspection of carcasses, or by diagnostic testing of cattle with tuberculin. This, the only undoubtedly useful application of the so-called tuberculin, has the drawback that after the effect of the inoculation has passed off, a tuberculous animal becomes immune to it for a time, and so may be passed as healthy. (It is said that cattle suspected of tubercle are thus rendered immune to the tubercular test before being sent over the French frontier.)

9. The question of the treatment of phthisis was only a supplementary part of the work of the Congress, and is too large to be dealt with in a report of this nature.

The following facts may however, be stated as important for the people as well as their governors to be aware of:—

a. That tuberculous disease of the bones and joints of the glands and skin and abdomen, though dangerous, is not incurable, and by the modern methods of operative medicine, is in most cases successfully cured.

b. That tuberculosis of the lungs (phthisis or consumption) is frequently cured, and probably more often now than formerly. (Curschmann of Leipzig, 4th day of Congress.)

c. That there is no specific drug which has direct influence upon consumption, but that many, both old and new, have valuable effects upon its complications. (On the Action of the New Tuberculin, see Briger's paper, on the 2nd day of Congress, and Dr. C. T. Williams in the R. Med. Ch. Trans. for the present year.)

d. That abundant food, particularly of a fatty nature, and a life in the open air, are no less valuable in the treatment than in the prevention of phthisis, and that the hospitals and asylums for providing these essentials, which are now numerous in Germany, and far from rare in England, Austria and Hungary, France, and the United States, are of essential value. That the "open air treatment" has been long known and practised in the United Kingdom was handsomely acknowledged by Professor Von Leyden (1st day of Congress). Compare papers by Kaurin (Norway), Westhoven (Ludwigshaven), J. R. Walters (London), Desider Kuthy (Buda-Pesth), Schmid (Switzerland), Dómene (Spain), 4th day.

e. That the influence of climate, altitude, temperature, and dryness of the air and soil, of travelling, and of sea voyages, has been very differently estimated at different periods, and that while each is in various degrees important, popular opinion probably exaggerates their power. (Hermann Weber of London, 4th day of Congress.)

f. That the prospect of improved success in the treatment of tuberculosis in general, and of consumption in particular, by the advance of pathology and the progress of surgery and medicine, is a hopeful one, almost as hopeful as that of limiting the spread of the disease by preventive measures.

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CHAPTER 8.

An Act to extend the Infectious Disease (Notification) Act, 1889, to Districts in which it has not been adopted.

A.D. 1899.

[20th June 1899.]

BE it enacted by the Queen's most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows :—

1.—(1.) The Infectious Disease (Notification) Act, 1889, shall after the commencement of this Act extend to and take effect in every urban, rural, and port sanitary district, as defined for the purposes of that Act, in England or Wales, whether that Act has or has not been adopted therein before the commencement of this Act.

Extension of
52 & 53 Vict.
c. 72.

(2.) In any such district in which the Infectious Disease (Notification) Act, 1889, has not been adopted before the commencement of this Act, that Act shall for the purposes of section fourteen thereof (which relates to the operation of local Acts) be treated as having been put in force on the commencement of this Act.

2. Nothing in this Act shall be construed to repeal, alter, or affect the provisions of any local Act which immediately before the passing of this Act was in force within the county borough of Huddersfield.

Saving for
Corporation
of Hudders-
field.

3.—(1.) This Act may be cited as the Infectious Disease (Notification) Extension Act, 1899, and the Infectious Disease (Notification) Act, 1889 and this Act may be cited together as the Infectious Disease (Notification) Acts, 1889 and 1899.

Short title,
repeal, and
commence-
ment.

(2.) The enactments specified in the schedule to this Act are hereby repealed, as regards England and Wales, to the extent mentioned in the third column of that schedule.

(3.) This Act shall come into operation upon the first day of January one thousand nine hundred.

A.D. 1899.

SCHEDULE.

ENACTMENTS REPEALED.

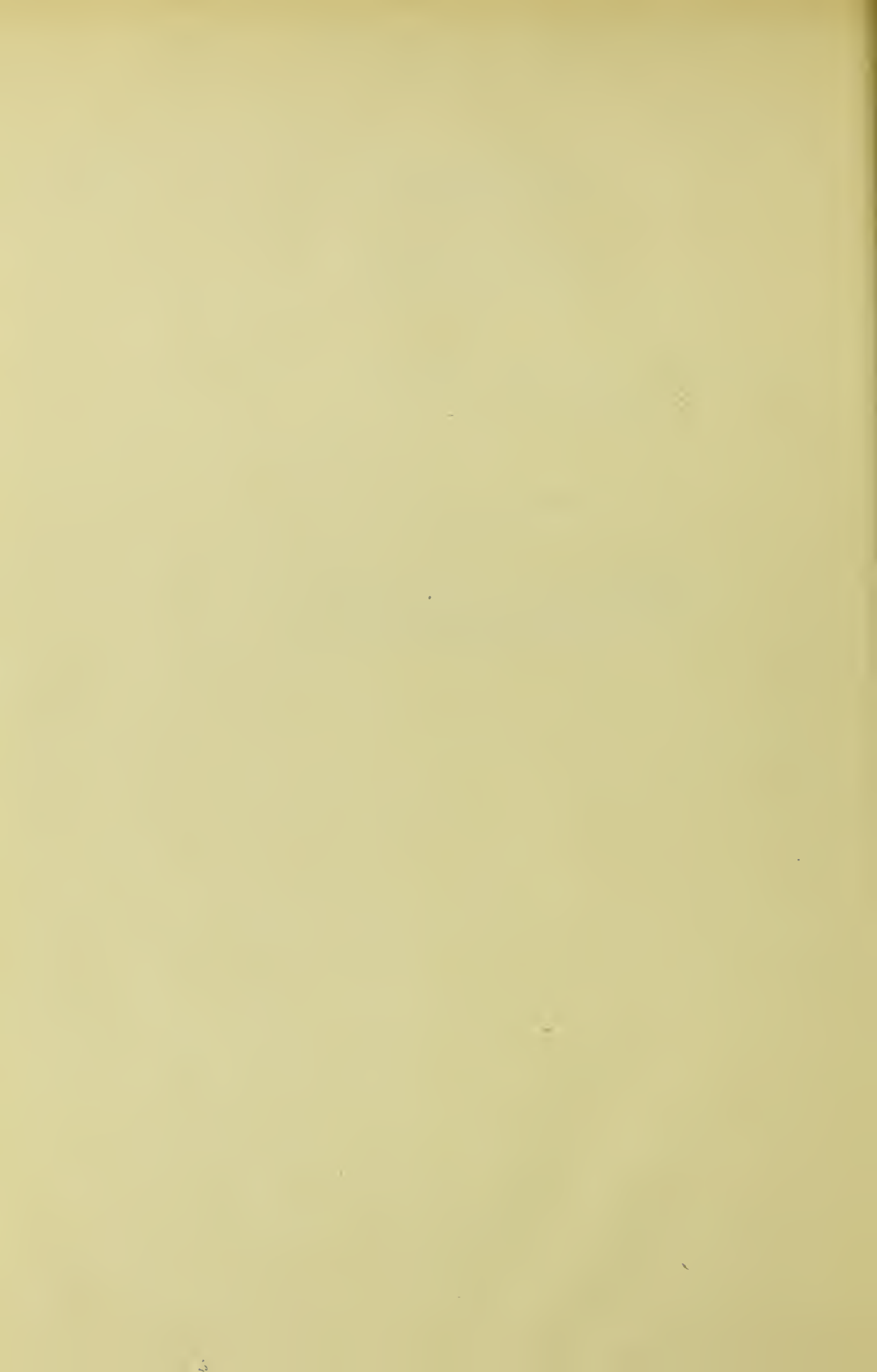
Session and Chapter.	Short Title.	Extent of Repeal.
52 & 53 Vict. c. 72. -	The Infectious Disease (Notification) Act, 1889.	In section two the words "after the adoption thereof." Section five.

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London Government Act, 1899.

[62 & 63 VICT. CH. 14.]

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ARRANGEMENT OF SECTIONS.

A.D. 1899.

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Section.

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2. Constitution of borough councils.
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Powers of Borough Councils.

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19. Application of Act to Woolwich.
20. Special provision as to Penge.
21. Provision as to Kensington Palace.
22. Provision as to the Temples.

[Price 3d.]

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A.D. 1899.

Supplemental.

Section.

23. Church affairs and charities.
24. Mayors of boroughs as justices of the peace.
25. Deputy town clerk.
26. Alteration of wards.
27. Provisions as to names, first elections, &c.
28. Provisional Orders and proceedings of Local Government Board.
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32. Borough councils not to alienate open spaces.
33. Appointed day and transitory provisions.
34. Definitions.
35. Short title and repeal.

SCHEDULES.



CHAPTER 14.

An Act to make better provision for Local Government in London. A.D. 1899.
[13th July 1899.]

BE it enacted by the Queen's most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows:—

Establishment of Metropolitan Boroughs.

1. The whole of the administrative county of London, exclusive of the City of London, shall be divided into metropolitan boroughs (in this Act referred to as boroughs), and for that purpose it shall be lawful for Her Majesty by Order in Council, subject to and in accordance with this Act, to form each of the areas mentioned in the First Schedule to this Act into a separate borough, subject, nevertheless, to such alteration of area as may be required to give effect to the provisions of this Act, and subject also to such adjustment of boundaries as may appear to Her Majesty in Council expedient for simplification or convenience of administration, and to establish and incorporate a council for each of the boroughs so formed.

Establishment of metropolitan boroughs in London.

2.—(1.) The council of each borough shall consist of a mayor, aldermen, and councillors. Provided that no woman shall be eligible for any such office.

Constitution of borough councils.

(2.) An Order in Council under this Act shall fix the number of councillors, and fix the number and boundaries of the wards, and shall assign the number of councillors to each ward, that number being divisible by three, and regard being had to the rateable value as well as to the population of the wards.

(3.) The number of aldermen shall be one-sixth of the number of councillors, and the total number of aldermen and councillors for each borough shall not exceed seventy.

A.D. 1899.

51 & 52 Vict.
c. 41.

(4.) Except as otherwise provided by or under this Act, the provisions of the Local Government Act, 1888, with respect to the chairman of the county council and the county aldermen respectively shall apply to the mayor and aldermen of a metropolitan borough respectively, and for this purpose references in that Act to the chairman of the county council and to county aldermen shall be construed as references to the mayor and aldermen of the borough.

56 & 57 Vict.
c. 73.

(5.) Except as otherwise provided by or under this Act, the law relating to the constitution, election and proceedings of administrative vestries, and to the electors and members thereof, shall apply in the case of the borough councils under this Act and the electors and councillors thereof, and section forty-six of the Local Government Act, 1894, relating to disqualifications shall apply to the offices of mayor and alderman.

(6.) The quorum of the borough council shall be one-third of the whole number of the council.

(7.) The mayor and an alderman of a metropolitan borough shall be required to accept office within the same period as is allowed in the case of a councillor.

(8.) The Local Government Board may, on request made by a borough council in pursuance of a resolution of the council passed by a majority of two-thirds of the members present and voting at a meeting of the council duly convened for the purpose, provided that such majority is not less than the majority of the whole council, make an order directing that the whole of the councillors shall retire together on the ordinary day of election in every third year, and may on like request rescind any such order.

Date for
elections of
councillors.

3.—(1.) The first elections of all borough councillors under this Act shall be held on the first day of November one thousand nine hundred, or on such later day, as soon as practicable thereafter, as may be fixed by the Lord President of the Council, who shall also fix a corresponding date for the first elections of mayor and aldermen.

(2.) The ordinary day of election of borough councillors shall be the first day of November, or if that day is Sunday, then the following day.

(3.) The ordinary day of election of the mayor and aldermen shall be the ninth day of November, or if that day is Sunday, then the following day.

(4.) The revised lists of voters in each borough shall in each year after the year one thousand nine hundred be printed and signed before the twentieth day of October, and come into operation as the register for the purpose of borough elections on the first day of November. A.D. 1899.

Powers of Borough Councils.

4.—(1.) On the appointed day every elective vestry and district board in the county of London shall cease to exist, and, subject to the provisions of this Act and of any scheme made thereunder, their powers and duties, including those under any local Act, shall, as from the appointed day, be transferred to the council for the borough comprising the area within which those powers are exercised, and their property and liabilities shall be transferred to that council, and that council shall be their successors, and the clerk of the council shall be called the town clerk, and shall be the town clerk within the meaning of the Acts relating to the registration of electors.

Transfer to
borough
councils of
powers from
vestries and
district
boards.

Provided that in the case of borrowing powers so transferred, if the London County Council refuse their sanction, or do not within six months after application made give their sanction, to a loan, or attach conditions to their sanction, an appeal shall lie to the Local Government Board, whose decision shall be final.

(2.) Where any of the adoptive Acts is adopted within a borough, the borough council shall be the authority for administering the Act; and where any such Act has been adopted before the appointed day, and is administered by commissioners or a board, a scheme under this Act shall abolish the commissioners or board, and transfer their powers, duties, property, and liabilities to the borough council.

(3.) The powers of a borough council shall, save as in this Act mentioned, extend to the whole of their borough.

Provided that any power or duty of the council under any Act, whether general or local, conferring powers in relation to some particular parish or district, or part of a parish or district, shall be exercised and performed by the council either throughout the borough or in a limited part thereof, or shall cease to be exercised and performed, as may be provided by a scheme under this Act, having regard to the object of the Act under which the power or duty arises, and to the nature of any change of area or alteration of boundary made by or under this Act.

(4.) Any of the adoptive Acts may be adopted in a metropolitan borough in like manner as in a borough outside London, and not

A.D. 1899. otherwise, and where any of the adoptive Acts adopted before the appointed day does not extend to the whole borough, the Act may be adopted in the rest of the borough in like manner as if it were a separate borough and the borough council were the council thereof.

Transfer of
powers from
London
County
Council.

5.—(1.) As from the appointed day the powers and duties of the London County Council under the enactments mentioned in Part One of the Second Schedule to this Act shall, subject to the conditions mentioned in that schedule, be transferred to each borough council as respects their borough.

(2.) As from the appointed day the powers of the London County Council under the enactments mentioned in Part Two of the Second Schedule to this Act may, subject to the conditions mentioned in that schedule, be exercised also by each borough council as respects their borough.

(3.) The Local Government Board may, if they think fit, on the application of the London County Council and of the majority of the borough councils, make a Provisional Order for transferring to all the borough councils any power exercisable by the County Council, or for transferring to the County Council any power exercisable by the borough councils.

(4.) The Local Government Board may also, on the joint application of the London County Council and the Common Council of the City of London, make a Provisional Order transferring any power from the County Council to the Common Council, or from the Common Council to the County Council.

Additional
powers and
duties of
borough
councils.

6.—(1.) As from the appointed day the power and duty of maintaining any main road existing at the passing of this Act within a borough shall be transferred to the borough council, and the road shall vest in the borough council and shall cease to be a main road.

(2.) Where a highway in a borough is repairable by the London County Council by reason of its being the roadway or footway of a bridge, embankment, or otherwise, the borough council shall, if so required by the county council, undertake the maintenance and repair thereof in consideration of such annual payment by the county council as may from time to time be agreed on, or in default of agreement be finally determined by the Local Government Board, and for the purpose of the undertaking the borough council shall have the same powers and be subject to the same duties and liabilities as if the highway were vested in them.

(3.) The power of a borough council to close or stop up a street under section eighty-four of the Metropolis Management Amendment Act, 1862, shall not require the sanction or allowance of the London County Council. Provided that before closing or stopping any such street the borough council shall give notice to the councils of any contiguous boroughs.

A.D. 1899.
25 & 26 Vict.
c. 102.

(4.) It shall be the duty of each borough council to enforce within their borough the byelaws and regulations for the time being in force with respect to dairies and milk, and with respect to slaughter-houses, knackers' yards, and offensive businesses, and for the purpose of performing this duty the borough council shall in all cases have the same powers of entry as they have in the case of slaughter-houses and knackers' yards, and if the council make default in performing this duty, the provisions of the Public Health (London) Act, 1891, shall apply as if the default were a default under that Act.

54 & 55 Vict.
c. 76.

(5.) A borough council may, with the consent of the Local Government Board, alienate any land for the time being vested in the council, and the proceeds of the sale of any land sold by the council shall be applied in such manner as the Local Government Board sanction towards the discharge of any loan of the council or otherwise for any purpose for which capital may be applied by the council.

(6.) A borough council shall have the same powers of promoting and opposing Bills in Parliament, and of prosecuting or defending any legal proceedings necessary for the promotion or protection of the interests of the inhabitants of their borough, as are conferred on borough councils outside London by the Borough Funds Act, 1872, and the provisions of that Act shall extend to the council of a metropolitan borough as if that council were included in the expression "governing body" and the borough were a district in that Act mentioned.

35 & 36 Vict.
c. 91.

7.—(1.) Where any power or duty is transferred from the London County Council to a borough council or from a borough council to the London County Council by or under this Act, the borough council or county council, as the case may be, shall defray as part of their ordinary expenses the expenses of and incidental to the power or duty, but the county council shall contribute to the borough council, or the borough council to the county council, in respect of those expenses, such amount, if any (whether capital or annual), and subject to such conditions, if any, as may—

Expenses
incidental
to transfer
of powers or
duties.

(a) if the transfer is made by this Act, be agreed on between the councils within six months after the transfer, or in default of

A.D. 1899.

agreement be finally determined by the Local Government Board ; and

(b) if the transfer is made by a Provisional Order, be fixed by the Order.

Provided that every borough council shall have an opportunity of making a representation to the Local Government Board as to the amount of any contribution under this section to another council, and if the amount is settled by agreement may, within three months from the date at which the agreement is notified to them, appeal against it to the Local Government Board, who may finally determine the amount.

(2.) Where the transfer is made by Provisional Order the amount of contribution from or to the county council may be varied in each case to meet the circumstances of the case.

(3.) This section shall apply as if the Common Council of the City of London were the council of a metropolitan borough.

Committees.

55 & 56 Vict.

c. 53.

56 & 57 Vict.

c. 11.

8.—(1.) Any committee appointed by a borough council for the purpose of the Public Libraries Acts, 1892 and 1893 may consist partly of persons not members of the council.

(2.) Every committee shall report their proceedings to the council, but, to the extent to which the council so direct, the acts and proceedings of the committee shall not require the approval of the council. Provided that a committee shall not raise money by loan or by rate, or spend any money beyond the sum allowed by the council.

(3.) Every borough council shall from time to time appoint a finance committee for regulating and controlling the finance of the council ; and no order for payment of any sum, whether on account of capital or income, shall be made by a borough council except in pursuance of a resolution of the council passed on the recommendation of the finance committee ; and any costs, debt, or liability exceeding fifty pounds shall not be incurred except upon a resolution of the council passed on an estimate submitted by the finance committee. The notice of the meeting at which any resolution for the payment of any sum by the borough council (otherwise than for ordinary periodical payments) or any resolution for incurring any costs, debt, or liability exceeding fifty pounds will be proposed, shall state the amount of the said sum, costs, debt, or liability, and the purpose for which they are to be paid or incurred. Provided that the foregoing provisions shall not apply to payments made in pursuance of a precept from another authority.

56 & 57 Vict.

c. 73.

(4.) Section fifty-seven of the Local Government Act, 1894, which relates to joint committees, shall, with the substitution of the

words Local Government Board for County Council therein, apply to borough councils as if they were district councils. A.D. 1899.

9.—(1.) All payments to and by the borough council shall be made to and by the borough treasurer, and all payments by the council shall, unless made in pursuance of the specific requirement of an Act of Parliament, or of an order of a competent court, be made in pursuance of an order of the council signed by three members of the finance committee present at the meeting of the council, and countersigned by the town clerk, and the same order may include several payments. Moreover, all cheques for payment of moneys issued in pursuance of any such order shall be countersigned by the town clerk, or by a deputy approved by the council. Payments to and by borough council.

(2.) Any such order may be removed into the High Court of Justice by writ of certiorari, and may be wholly or partly disallowed or confirmed on motion and hearing with or without costs according to the judgment and discretion of the court.

Rates, Overseers, and Audit.

10.—(1.) A scheme under this Act shall provide for all the expenses of a borough council being paid out of the general rate, and for the discontinuance of a separate sewers rate and separate lighting rate, but shall make provision for protecting the interests of owners and occupiers of any hereditament which is exempt from any rate or liable to be assessed thereto at a less amount than other hereditaments. Levy of rates.

(2.) After the appointed day the general rate and the poor rate shall be assessed, made, and levied together by the borough council as one rate, which shall be termed the general rate, and shall be assessed, made, collected, and levied, as if it were the poor rate, and all enactments applying or referring to the poor rate shall, subject to the provisions of this Act as to audit, be construed as applying or referring also to the general rate.

(3.) Where a borough comprises more than one parish, the amount to be raised to meet the expenses of the borough council, or other sums payable as part of those expenses, shall, subject to any provision required for the adjustment of local burdens, be divided between the parishes in proportion to their rateable value.

(4.) Where any of the adoptive Acts, or any local or other Act, does not extend to the whole borough, any rate required to meet the expenses incurred under the Act shall, subject to the provisions of any scheme under this Act, be levied together with, and as an additional item of, the general rate over the area to which the Act extends.

A.D. 1899.

Provisions as
to overseers
and collec-
tion of rates.

11.—(1.) After the appointed day the council of each borough shall be the overseers of every parish within their borough, and shall appoint such officers as may be required to assist in the transaction of the business, and shall defray the expenses of and incidental to the performance of the duties, of overseers. Provided that the town clerk of each borough shall have the powers and duties and be subject to the liabilities of overseers with respect to the preparation of lists of voters and of jury lists in the borough, and any document required to be signed by overseers may be signed by the town clerk.

(2.) After the appointed day every precept issued by any authority in London for the purpose of obtaining money which is ultimately to be raised out of a rate within a borough, other than a precept sent to guardians by the Local Government Board or by a body containing representatives elected by the guardians, shall be sent to the council at their office, addressed to the council or to the town clerk. Any such precept, if so sent and addressed, shall be deemed to be personally served on the council, and shall be executed by them. "Precept" in this section includes any order, certificate, warrant, or other document of a like character, and the Local Government Board may settle the form of any precept as so defined.

(3.) After the appointed day all the rates collected in a metropolitan borough from any person by the council shall, as far as is practicable, be levied on one demand note, and the demand note shall be in a form approved by the Local Government Board, and shall state in manner provided in that form—

(a) the rateable value of the premises in respect of which the rate is levied ; and

(b) the rate in the pound ; and

(c) the period for which the rate is made ; and

(d) the several purposes for which the rate is levied ; and

(e) the approximate amount in the pound required for each purpose (including, as far as is practicable, the proportionate amount of the estimated costs of and loss in collection) ; and

(f) any matter required by section two of the London (Equalisation of Rates) Act, 1894, or any other enactment, to be stated in the demand note.

57 & 58 Vict.
c. 53.Incidence of
sewers rate
or its
equivalent.

12. As between landlord and tenant every tenant who, if this Act had not been passed, would have been entitled to deduct against or to be repaid by his landlord any sum paid by the tenant on account of the sewers rate, shall in like manner be

entitled to deduct against or to be repaid by his landlord such portion of the general rate as represents the sewers rate. A.D. 1899.

13. Where the whole of a poor law union is within one borough, the assessment committee shall, notwithstanding anything in section five of the Valuation (Metropolis) Act, 1869, be appointed by the borough council instead of by the board of guardians, and, where the borough comprises the whole of two or more unions, the council shall appoint only one assessment committee for those unions, and where the council appoint the assessment committee the town clerk shall act as the clerk to that committee. Assessment Committees.
32 & 33 Vict.
c. 67.

14. After the appointed day the accounts of the council of every metropolitan borough, and of any committee appointed by the council, and of their officers, including the accounts relating to the making, levy, and collection of any rate made by the council, shall be made up and audited in like manner and subject to the same provisions as the accounts of the London County Council, and the enactments relating to the audit of those accounts and to all matters incidental thereto and consequential thereon, including the penal provisions, shall apply accordingly. Audit of accounts.

Orders and Schemes.

15.—(1.) It shall be lawful for Her Majesty in Council to refer to a Committee of the Privy Council the appointment of Commissioners to prepare such Orders and schemes as are required for carrying this Act into effect, and the Committee may settle the Orders and schemes so prepared, and may employ such persons as they may deem necessary for the purposes of this Act. Appointment of Commissioners and preparation of Orders and schemes.

(2.) Before any Order in Council forming an area into a borough is made under this Act, the draft thereof shall be laid before each House of Parliament for a period of not less than thirty days during the session of Parliament, and if either of those Houses before the expiration of those thirty days presents an address to Her Majesty against the draft or any part thereof, no further proceedings shall be taken thereon, without prejudice to the making of any new draft Order.

(3.) The Commissioners shall for the execution of their duties under this Act have the like powers as inspectors of the Local Government Board.

(4.) Any expenses incurred by the Committee under this Act shall, to the amount certified by the Treasury, be paid by the London County Council out of the county fund.

A.D. 1899.

Provisions to
be made by
scheme.45 & 46 Vict.
c. 50.51 & 52 Vict.
c. 41.56 & 57 Vict.
c. 73.57 & 58 Vict.
ch. cc iii.**16.—(1.)** A scheme under this Act may make provision—

- (a) for any matters which under this Act are to be regulated by scheme; and
- (b) for any of the purposes, except police, for which a scheme may be made under Part Eleven of the Municipal Corporations Act, 1882, so far as those purposes are consistent with this Act; and
- (c) for anything which may be done with respect to a parish by an order under section fifty-seven of the Local Government Act, 1888, or may be done under section thirty-three of the Local Government Act, 1894, so, however, that parishes in different unions shall not be united except with the approval of the Local Government Board; and
- (d) for such adjustments as may be required for carrying into effect any of the provisions of this Act or for preventing any injustice with respect to the incidence of any rate or the discharge of any liability or otherwise, and in particular for such adjustments as may be required for the efficient maintenance of any libraries, baths, or washhouses, which have been maintained under the provisions of any of the adoptive Acts; and
- (e) for preserving, so far as may appear necessary or expedient, any right, power, exemption, or immunity heretofore exercised or enjoyed in respect of property belonging to or occupied by the Crown or any Government department; and
- (f) for making such alterations in the boundaries of the electoral divisions for the purpose of school board elections as may be rendered necessary by any alteration in the area of the county of London; and
- (g) for repealing or modifying any local Act other than the London Building Act, 1894; and
- (h) for carrying into effect this Act or any Order in Council made thereunder;

and may contain any incidental, consequential, or supplemental provisions, which may appear to be necessary or proper for the purposes of the scheme.

(2.) In making adjustments by a scheme under this section, regard shall be had to any composition, contribution, or exemption, whether statutory or otherwise, which has heretofore existed in regard to any portion of any area dealt with under the scheme.

45 & 46 Vict.
c. 50.48 & 49 Vict.
c. 38.

(3.) The provisions of the Municipal Corporations Act, 1882, as amended by the School Boards Act, 1885, with respect to a scheme

under Part Eleven of the first-mentioned Act, shall apply in the case of any scheme under this Act with the necessary modifications, and any governors or trustees of the poor or other similar body under a local Act shall be deemed, but the London County Council shall not be deemed, to be a local authority within the meaning of those provisions. There shall also be deemed to be local authorities within the meaning of the said provisions :—

A.D. 1899.

(a) the mayor, commonalty, and citizens, and the Court of Aldermen of the City of London, so far as relates to any powers exerciseable by them or by officers appointed by them respectively within the ancient borough of Southwark ; and

(b) the Dean and Chapter of the Collegiate Church of St. Peter, Westminster, so far as relates to any powers of local government exerciseable by them or their officers within the borough of Westminster, and the Court of Burgesses of the ancient city of Westminster.

(4.) Provided that notification in the London Gazette, and in such other manner as the Committee of Council may direct, of a draft scheme having been prepared or of a scheme having been settled, and of the place where copies of it can be inspected and obtained, shall be substituted for publication of the draft scheme or scheme in the London Gazette or in the manner required by the Seventh Schedule to the Municipal Corporations Act, 1882.

45 & 46 Vict.
c. 59.

17.—(1.) Every part of the administrative county of London outside the City shall be situate in some borough and some parish, and a parish shall not be situate in more than one borough, or partly in a borough and partly in the City.

Rules as to
boroughs
and parishes.

(2.) An Order in Council under this Act may divide a parish or place into parts for the purpose of giving effect to this section or of constituting a satisfactory area for a borough, and, unless otherwise provided by the Order or by a scheme under this Act, each part shall be a separate parish.

18.—(1.) Every part of a parish in London which is wholly detached from the principal part of the parish shall by an Order in Council under this Act be annexed to or divided between any of the boroughs which it adjoins, and be either constituted a separate parish or be annexed to or divided between any of the parishes which it adjoins, so however that the provisions of this Act with respect to a parish not being situate in more than one borough shall be observed.

Detached
parts of
parishes.

A.D. 1899.

Provided that if the Commissioners under this Act make a special report to Parliament that by reason of anything done under any of the adoptive Acts, or for any other exceptional reason, it is impracticable to deal with a detached part of a parish in manner required by the foregoing provisions of this section, those provisions shall not apply.

And further provided that the foregoing provisions of this section shall not apply to the hamlet of Knightsbridge.

(2.) Where the county of London surrounds a detached part of a parish in another county, the foregoing provisions shall apply, and the detached part shall for all purposes become part of the county of London and of the appropriate county electoral division.

(3.) Where a detached part so becomes part of the county of London, and is part of any urban district the remainder of which adjoins the county of London, the whole of the district may, by Order in Council, if it seems expedient after considering all the circumstances of the case, be added to and form for all purposes part of the county of London and of the appropriate borough.

(4.) Where a detached part of a parish in the county of London is wholly surrounded by any other county, the detached part shall for all purposes become part of that county, and where a detached part as aforesaid is surrounded by more than one county, that detached part shall become part of such county as shall be determined by Order in Council under this Act, and every such detached part shall, by Order in Council, be either constituted a separate parish or annexed to or divided between any parish or parishes which it adjoins, and be added to the appropriate county district and county electoral division.

(5.) Nothing in this section shall apply to the City of London.

(6.) The London County Council and the council of any adjoining county shall be entitled to be heard on any alteration or proposed alteration of the area of the county of London.

Application
of Act to
Woolwich.

19.—(1.) A scheme under this Act shall provide for placing Woolwich under the general law applying to metropolitan boroughs, and for the repeal of the application thereto of the provisions of the Public Health Acts and other enactments not applying to London, and for the application thereto of the Metropolis Management Acts, 1855 to 1893, and other enactments applying to London.

(2.) Subject to the provisions of any such scheme, this Act shall apply to Woolwich in like manner as if the local board of health thereof were an administrative vestry. A.D. 1899.

(3.) Nothing in this Act shall prevent the council of any borough consisting of or comprising Woolwich from continuing to make any contribution for the purpose of technical education hitherto made by any local authority, or from exercising any existing powers of carrying on a market.

20.—(1.) An Order in Council under this Act may either annex Penge to the borough of Lewisham or to the borough of Camberwell, or separate it from the county of London and make it form part of the county of Surrey or of the county of Kent, and if it is so separated shall provide for constituting it an urban district, or for adding it to an adjoining county borough or urban district, and if necessary shall determine the county electoral division to which it is to belong. Special provision as to Penge.

(2.) A scheme under this Act shall make such provision as may be necessary for the apportionment and transfer of property and liabilities, and for the repeal of the application to Penge of the Metropolis Management Acts, 1855 to 1893, and any other enactments applying to London, and for the application thereto of the Public Health Acts and other enactments not applying to London.

21. An Order in Council under this Act may detach Kensington Palace from the borough of Westminster and attach it to the borough of Kensington. Provision as to Kensington Palace.

22. The places known as the Inner and Middle Temples shall for the purposes of this Act be deemed to be within the city of London. Provision as to the Temples.

Supplemental.

23.—(1.) Nothing in this Act shall transfer to a borough council any powers or duties of a vestry which relate to the affairs of the Church or any interest of a vestry in any church property, or shall make any incumbent or churchwarden an ex-officio member of a borough council, and a scheme under this Act shall provide for vesting any such powers and duties in the inhabitants of some parish or ecclesiastical district, and for vesting any such interest in the incumbent and churchwardens or one or some of them, and for the collection of any rate connected with a church or an incumbent by the churchwardens, or by officers appointed for the purpose. Church affairs and charities.

A.D. 1899.

(2.) Provided that any building which belongs to any body whose powers and duties are transferred to any borough council by or under this Act, and which has been erected wholly or partly on a churchyard shall, with its appurtenances, be transferred to and vest in the council, subject to such right of use for church purposes as may be given by the scheme.

56 & 57 Vict.
c. 73.

(3.) As from the appointed day, the churchwardens of every parish within a metropolitan borough shall cease to be overseers, and references in any Act to the churchwardens and overseers of any such parish shall, except so far as those references relate to the affairs of the church, be construed as references to the council of the borough comprising the parish, and the legal interest in all property vested either in the overseers or churchwardens and overseers of any such parish (other than property connected with the affairs of the church or held for an ecclesiastical charity within the meaning of the Local Government Act, 1894), shall, subject to the provisions of any scheme under this Act, vest in the borough council.

(4.) Provision shall be made by scheme under this Act for substituting nominees of the borough council for overseers as trustees of any charity, due regard being had to the area benefited by the charity.

(5.) The Charity Commissioners shall, for the purposes of this Act, have the like powers with respect to charities, subject to the like appeal, as they have under and for the purposes of the Local Government Act, 1894.

(6.) Nothing in this Act shall affect the right to the benefit of any charity, or shall alter or confer any power of altering the defined charitable purposes (if any) to which any property is by law applicable at the passing of this Act.

Mayors of
boroughs as
justices of
the peace.

24. With respect to a mayor of a borough being by virtue of his office a justice of the peace—

- (1) he shall become a justice of the peace for the county of London ;
- (2) he shall not be disqualified by reason of being a solicitor practising or carrying on business in the county of London or city of London ;
- (3) he shall not practise as a solicitor before any justices of the county of London.

Deputy town
clerk.

25. In case of the illness or absence of the town clerk, the borough council may appoint a deputy town clerk to hold office

during their pleasure, and all things required or authorised by law to be done by or to the town clerk may be done by or to the deputy town clerk, and no defect in the appointment of a deputy shall invalidate his acts. A.D. 1899.

26.—(1.) Whenever the Local Government Board is satisfied that a *prima facie* case is made out for a proposal for the alteration of the number of wards of a metropolitan borough, or of the boundaries of any ward, or of the apportionment of the members of the council among the wards, the Local Government Board may cause such inquiry to be made and such notices to be given as they may think expedient; and if satisfied that the proposal is desirable, may make an order accordingly. Alteration
of wards.

(2.) Notice of the provisions of the order shall be given, and copies thereof shall be supplied, in such manner as the Local Government Board may direct.

(3.) The expenses of and incidental to the making of the order shall be paid by the borough council.

27.—(1.) An Order in Council under this Act shall—

(a) give each of the metropolitan boroughs an appropriate name; and

(b) fix the days, years, and times for the retirement of the first aldermen and councillors; and

(c) give such directions as to the first meeting of the borough councils, and make such other temporary modifications of the provisions of this Act, as may appear to Her Majesty to be necessary or proper for making those provisions applicable in the case of the first constitution of a borough council.

Provisions
as to names,
first
elections, &c.

(2.) An Order in Council under this Act may make such provisions as appear necessary for adapting the enactments relating to the registration of electors to the provisions of this Act with respect to the powers and duties of the town clerk and overseers, and in particular for applying, so far as appears necessary, the law regulating the registration of electors in a municipal borough outside London.

(3.) An Order in Council under this Act shall provide for the revised lists of voters in the administrative county of London outside the city being, in the year one thousand nine hundred, printed and signed before the twentieth day of October, and coming into operation as the register for the purpose of borough elections on

A.D. 1899. — the first day of November, and may provide for such adjustment of the lists of voters and registers with respect to any alteration under this Act of parish boundaries as may appear required for the purpose of those elections.

(4.) On the day on which the first borough councillors elected under this Act come into office, the persons who are then members of elective vestries or district boards, and the auditors and overseers of any place to be included in a borough, shall cease to hold office, and until that day the persons who are at the passing of this Act members of elective vestries and district boards, and auditors and overseers, shall continue in office as if the term of office for which they were elected or appointed expired on that day, and, except for the purpose of filling casual vacancies, no further election or appointment shall be held or made.

Provisional
Orders and
proceedings
of Local
Government
Board.
38 & 39 Vict.
c. 55.

28.—(1.) Sections two hundred and ninety-seven and two hundred and ninety-eight of the Public Health Act, 1875, shall apply to any Provisional Order made under this Act as if it were a Provisional Order made under that Act, except that the expenses incidental to the Provisional Order shall be defrayed by the councils concerned in such proportions as the Local Government Board may determine.

51 & 52 Vict.
c. 41.

(2.) Sub-sections one and five of section eighty-seven of the Local Government Act, 1888, shall apply to any proceedings of the Local Government Board under or for the purposes of this Act.

31 & 32 Vict.
c. 119.

(3.) Where the Local Government Board are authorised by this Act to determine any matter, it shall be at their option to determine the matter as arbitrators or otherwise, and, if they elect to determine the matter as arbitrators, the provisions of the Regulation of Railways Act, 1868, respecting arbitrations by the Board of Trade, and the enactments amending those provisions, shall apply as if they were herein re-enacted and in terms made applicable to the Local Government Board and the determination of matters under this Act.

Proceedings
in case of
doubts as to
transfer of
powers.

29. If any question arises, or is about to arise, as to whether any power, duty, or liability is or is not transferred by or under this Act to the council of any metropolitan borough, or any property is or is not vested in any such council, that question, without prejudice to any other mode of trying it, may, on the application of the council, be submitted for decision to the High Court in such summary manner as, subject to any rules of court, may be directed by the court; and the court, after hearing such

parties and taking such evidence (if any) as it thinks just, shall decide the question. A.D. 1899.

30.—(1.) Where the powers and duties of any authority are transferred by or under this Act to any borough council, the existing officers of that authority shall be transferred to and become the officers of that council. Any assistant overseers, rate collectors, and other officers employed in the performance of duties of overseers within a borough shall also be transferred to and become officers of the council for that borough. The council may abolish the office of any such officer whose office they may deem unnecessary; but any officer required to perform duties such as are not analogous, or which are an unreasonable addition to those which he is at present required to perform, may relinquish his office, and any officer so relinquishing his office, or whose office is abolished, shall be entitled to compensation under this Act. Existing officers.

(2.) Sub-sections four and seven of section eighty-one of the Local Government Act, 1894, shall apply to the existing officers affected by this Act as if references in those sub-sections to the district council were references to the borough council, and all expenses incurred by the borough council in pursuance of those sub-sections shall be paid out of the general rate: Provided that the borough council may, if it thinks fit, take into account continuous service under any authority or authorities to which this Act refers, in order to calculate the total period of service of any officer entitled to compensation under this Act. 56 & 57 Vict. c. 73.

(3.) For the purposes of this section “existing officers” shall mean officers holding office on the twenty-fourth day of February one thousand eight hundred and ninety-nine and also at the passing of this Act.

(4.) A scheme under this Act may make such provisions as may appear necessary for carrying this section into effect, and if necessary for determining the authority to whom any existing officer is to be transferred, and for applying the provisions of this section to any officer who suffers pecuniary loss by reason of anything in or done under this Act, although he is not transferred to a borough council, and although he is not an officer of an authority whose powers and duties are transferred by or under this Act, and for determining in any such case the fund out of which compensation is to be paid.

31.—(1.) Where any Act passed before the passing of this Act contains expressions referring to a borough, those expressions shall Construction of Acts and savings.

A.D. 1899. not be construed as referring to a metropolitan borough created by this Act unless applied thereto by or under the provisions of this Act or of any subsequent enactment.

(2.) Any enactment in any Act, whether general or local, referring to an authority whose powers or duties are transferred by or under this Act to a borough council shall be construed with the necessary modifications, including the substitution of the borough council for that authority and of the borough for the area of that authority.

(3.) Nothing in or done under this Act shall be construed as altering the limits of any parliamentary borough or parliamentary county.

(4.) Except so far as the areas of parishes and sanitary districts are altered by or under this Act, nothing in this Act shall affect the London (Equalisation of Rates) Act, 1894.

57 & 58 Vict.
c. 53.

(5.) Nothing in this Act, or in any order or scheme under this Act, shall abridge, alter, or affect the powers, rights, duties, or jurisdiction of the School Board for London over the area which for the time being constitutes the administrative county of London.

Borough
councils not
to alienate
open spaces.

32. Nothing in this Act shall authorise any borough council to alienate any recreation ground or other open space dedicated to the use of the public, or any land held on trusts which prohibit building thereon.

Appointed
day and
transitory
provisions.

33.—(1.) For the purposes of this Act the appointed day shall be the day on which the members of the borough councils first elected under this Act come into office, or such other day not being more than six months earlier or later, as the Lord President of the Council may appoint, either generally, or with reference to any particular provision of this Act, and different days may be appointed for different purposes and different provisions of this Act, whether contained in the same section or in different sections, or for different boroughs.

56 & 57 Vict.
c. 73.

(2.) Subject to the provisions of any scheme under this Act, and to such adaptations as may be made by Order in Council, sections eighty-five to eighty-eight of the Local Government Act, 1894 (which contain transitory provisions), shall apply in the case of boroughs and borough councils under this Act.

Definitions.

34. In this Act, unless the context otherwise requires,—

The expression “administrative vestry” means a vestry having the powers of a vestry elected for a parish specified in

Schedule A. to the Metropolis Management Act, 1855; and the expression “elective vestry” means any vestry elected under the Metropolis Management Act, 1855: A.D. 1899.
—
18 & 19 Vict.
c. 120.

The expression “rateable value” shall include the value of Government property upon which a contribution in lieu of rates is paid:

The expressions “powers,” “duties,” “property,” “liabilities,” and “powers, duties, and liabilities,” have respectively the same meanings as in the Local Government Act, 1888: 51 & 52 Vict.
c. 41.

The expression “adoptive Acts” means the Baths and Wash-houses Acts, 1846 to 1896, the Burial Acts, 1852 to 1885, and the Public Libraries Acts, 1892 and 1893:

The expression “local Act” includes a provisional order confirmed by an Act, and the Act confirming the order; and the expression “enactment” includes a provision of any such order.

35.—(1.) This Act may be cited as the London Government Act, 1899. Short title
and repeal.

(2.) As from the appointed day the enactments mentioned in the Third Schedule to this Act shall be repealed to the extent in the third column of that schedule mentioned.

SCHEDULES.

A.D. 1899.

Section 1.

FIRST SCHEDULE.

AREAS WHICH ARE TO BE BOROUGHES.

The parishes of—

Battersea.

Bethnal Green.

Camberwell.

Chelsea.

Fulham

Hackney.

Hammersmith.

Hampstead.

Islington.

Kensington.

Lambeth.

Paddington.

St. Marylebone

St. Pancras.

Shoreditch.

The area consisting of the parishes of Mile End Old Town and St. George's-in-the-East and the districts of the Limehouse and Whitechapel Boards of Works including the Tower of London and the liberties thereof.

The district of the Poplar Board of Works.

The district of the Wandsworth Board of Works.

The area consisting of the parishes of St. George the Martyr, Christchurch, Southwark, St. Saviour, Southwark, and Newington.

The area consisting of the parishes of Rotherhithe, Bermondsey, Horselydown, and St. Olave and St. Thomas, Southwark.

The area of the parliamentary division of Holborn.

The area consisting of the parliamentary divisions of East and Central Finsbury.

The area of the parliamentary borough of Deptford.

The area of the parliamentary borough of Greenwich.

The area of the parliamentary borough of Lewisham.

The area of the parliamentary borough of Woolwich.

The area of the ancient parliamentary borough of Westminster, comprising the parishes of St. Margaret and St. John, Westminster, the parish of St. George, Hanover Square, the parish of St. James, Westminster, the parish of St. Martin-in-the-Fields and the district of the Strand Board of Works, and including the Close of the Collegiate Church of St. Peter, Westminster, and the Liberty of the Rolls.

The area consisting of the parish of Stoke Newington and of the urban district of South Hornsey, or so much thereof as may be incorporated with the county of London under this Act.

SECOND SCHEDULE.

A.D. 1899.

PART I.

Section 5 (1).

MINOR POWERS AND DUTIES TO BE TRANSFERRED FROM
COUNTY COUNCIL.

Powers and Duties transferred.	Conditions of Transfer.
Power under section eighty-four of the London Building Act, 1894, to license the setting up of wooden structures, and power to take proceedings for default in obtaining or observing the conditions of a licence under that section.	
Power under section one hundred and thirty-four of the London Building Act, 1894, in relation to the removal of unauthorised sky signs.	Subject in case of default to the provisions of the Public Health (London) Act, 1891, as if the default were a default under that Act.
Powers under section one hundred and ninety-nine of the London Building Act, 1894, which section relates to the removal of obstructions in streets.	
Power under section twenty-eight of the Public Health (London) Act, 1891, of registering dairymen.	Subject to the power of the London County Council to make byelaws, and in case of default to the provisions of the Public Health (London) Act, 1891, as if the default were a default under that Act.

A.D. 1899.

PART II.

Section 5 (2).

POWERS OF COUNTY COUNCIL TO BE EXERCISED ALSO BY
BOROUGH COUNCILS.

	Powers exercisable.	Conditions of Exercise.
57 & 58 Vict. c. cxiii.	Power under section one hundred and seventy of the London Building Act, 1894, which section relates to the demolition of buildings in case of the conviction for an offence against the Act, or byelaws made under it.	The power to be exercised only where the borough council have obtained the conviction.
	Power to take proceedings in respect of timber or other articles piled, stacked, or stored in contravention of section one hundred and ninety-seven or section two hundred (11) (h) of the London Building Act, 1894.	The power to be exercised only within the borough.
34 & 35 Vict. c. 113.	Powers under sections seventeen to twenty-five of the Metropolis Water Act, 1871, with respect to regulations of water companies.	The power to be exercised only with respect to a water company supplying any part of the borough.
51 & 52 Vict. c. 25.	Power under section seven of the Railway and Canal Traffic Act, 1888 to make or appear in opposition to certain complaints.	
51 & 52 Vict. c. 41.	Powers under section sixty-five of the Local Government Act, 1888, which section relates to the acquisition of land.	The power to be exercised only where the land is required for the purpose of any of the powers or duties of the borough council.
53 & 54 Vict. c. 70.	Power to adopt Part III. of the Housing of the Working Classes Act, 1890.	The power to be exercised only within the borough.
45 & 46 Vict. c. 50. 51 & 52 Vict. c. 41.	Power to make byelaws under section twenty-three of the Municipal Corporations Act, 1882, as applied by section sixteen of the Local Government Act, 1888.	The byelaws to be in force only within the borough and not to be inconsistent with any byelaws made by the county council.

THIRD SCHEDULE.

A.D. 1899.

ENACTMENTS REPEALED.

Section 35 (2).

Session and Chapter.	Short Title.	Extent of Repeal.
6 & 7 Vict. c. 18.	The Parliamentary Voters (Registration) Act, 1843.	In section fifty-six, the words "or to the town clerk of the borough of Southwark" and the words "and in regard to the borough of Southwark the high bailiff of the said borough."
18 & 19 Vict. c. 120.	The Metropolis Management Act, 1855.	<p>Sections two and three</p> <p>Section five.</p> <p>Section seven.</p> <p>Section eight, from the beginning to "shall be elected and," and the words "with such other persons as herein-before mentioned."</p> <p>Sections eleven and twelve.</p> <p>Section twenty-eight to "every such meeting."</p> <p>Section twenty-nine.</p> <p>Sections thirty-one to forty-two.</p> <p>Sections fifty-five and fifty-six.</p> <p>Sections fifty-seven, fifty-eight, sixty, sixty-one and sixty-six, so far as they relate to district boards and their districts, and section fifty-eight, from "Provided always" to the end of the section.</p> <p>Section ninety-one, from "save as regards" to "any of the said Acts; and."</p> <p>Section one hundred and fifty-four, from "may sell and dispose of any land" to "just; and any such board or vestry," except in so far as it applies to the Metropolitan Board of Works.</p> <p>Section one hundred and fifty-eight, from "but every such vestry."</p> <p>Sections one hundred and sixty-one to one hundred and sixty-five.</p> <p>Sections one hundred and sixty-six to one hundred and sixty-nine.</p> <p>Sections one hundred and seventy-two to one hundred and seventy-four.</p> <p>Sections one hundred and seventy-five to one hundred and seventy-nine.</p> <p>Sections one hundred and ninety-two to one hundred and ninety-seven.</p> <p>In section one hundred and ninety-eight, the words "the said account in abstract" to "printed therewith," and the words "account in abstract, statement, and" wherever they occur.</p>

A.D. 1899.

Session and Chapter.	Short Title.	Extent of Repeal.
18 & 19 Vict. c. 120— <i>cont.</i>	The Metropolis Management Act, 1855 — <i>cont.</i>	In section one hundred and ninety-nine, the words “according to the provisions of this Act.” Section two hundred and thirty-seven, from “nor shall such parts” to “cleansing.” Section two hundred and thirty-eight.
25 & 26 Vict. c. 102. -	The Metropolis Management Amendment Act, 1862.	In section eight, the words “and the “ precepts for obtaining payment “ of moneys required by the board “ for that purpose.” Sections nine to twelve. Section fourteen. Section fifteen, so far as it relates to vestries and district boards. Section sixteen. Section thirty-seven, so far as it relates to district boards. Section thirty-eight. Section forty. Section forty-one. In section fifty-six, the words “out “ of the sewers rate to be levied “ in their parish or district.” In section eighty-four, the words “with the previous sanction of “ the Metropolitan Board of “ Works” and the words “al- “ lowed by the Metropolitan “ Board.” The forms of precept in Schedule C.
48 & 49 Vict. c. 23. -	The Redistribution of Seats Act, 1885.	In section twelve the words “and “ also the town clerk for the new “ borough within the meaning of “ the Registration Acts.”
54 & 55 Vict. c. 76. -	The Public Health (London) Act, 1891.	Sections one hundred and two and one hundred and forty, and the Second Schedule.
55 & 56 Vict. c. 53. -	The Public Libraries Act, 1892.	Section twenty-two.
56 & 57 Vict. c. 73. -	The Local Government Act, 1894.	In section thirty-one, the words “the local board of Woolwich and”; the words “and the auditors for “ parishes elected under those “ Acts, and so far as respects the “ qualification of persons to be “ elected as if members of the “ district boards under the said “ Acts,” and the words “and no “ person shall ex officio be chair- “ man of any of the said vestries”; and sub-section (2).

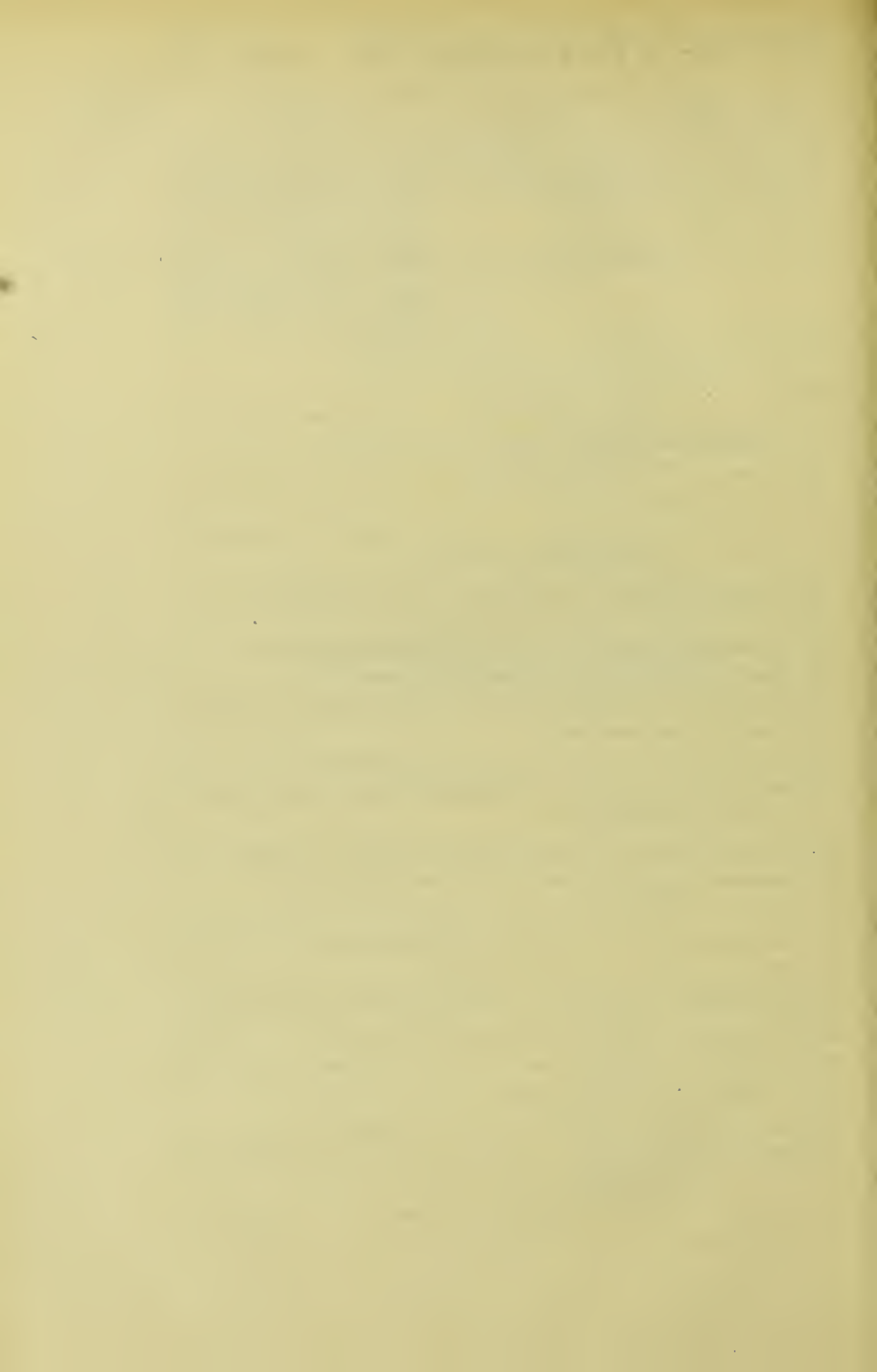
A.D. 1899,
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Session and Chapter.	Short Title.	Extent of Repeal.
56 & 57 Vict. c. 73 — <i>cont.</i>	The Local Govern- ment Act, 1894— <i>cont.</i>	At the end of section forty-six, the words “and in the case of London “ auditors as if they were members “ of a district council.” In section forty-eight, sub-section (4), the words “and of members “ of the local board of Wool- “ wich”; and in sub-section (5), the words “local board or” and “or auditor.”
56 & 57 Vict. c. ccxxi.	The London County Council (General Powers) Act, 1893.	Section fifteen.
58 & 59 Vict.c. cxxvii.	The London County Council (General Powers) Act, 1895.	Section forty-two.

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Sale of Food and Drugs Act, 1899.

[62 & 63 VICT. CH. 51.]

7

ARRANGEMENT OF SECTIONS.

A.D. 1899.

Section.

1. Precautions against importation of agricultural and other produce insufficiently marked.
2. Power for Local Government Board or Board of Agriculture to sample articles of food.
3. Power for Local Government Board or Board of Agriculture to act in default of local authority.
4. Power for Board of Agriculture to make regulations as to analysis of milk, cream, butter, or cheese.
5. Extension of Margarine Act, 1887, to margarine-cheese.
6. Marking of margarine and margarine-cheese.
7. Provisions as to manufacturers of and dealers in margarine and margarine-cheese.
8. Restriction on amount of butter fat in margarine.
9. Provision as to name and address of person selling milk or cream in a public place.
10. Division of samples taken in course of delivery or transit.
11. Provisions as to condensed separated or skimmed milk.
12. Notice of mixtures.
13. Amendment of 38 & 39 Vict. c. 63. as to samples.
14. Taking samples in course of delivery.
15. Amendment of 38 & 39 Viet. c. 63. as to registered parcels.
16. Obstruction of officer in discharge of his duties.
17. Penalties for offences under the Sale of Food and Drugs Acts.
18. Articles sold in tins or packets.
19. Time for proceeding and regulation as to summons.
20. Provisions as to use of warranty or invoice as defence, and proceedings against the warrantor.
21. Duty of court to send article for analysis.

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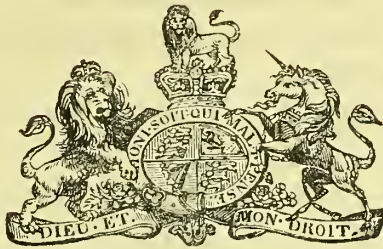
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A.D. 1899. Section.

- 22. Provisions as to certificates of analysis.
- 23. Transfer of powers from Secretary for Scotland to Local Government Board.
- 24. Application to Ireland.
- 25. Interpretation of terms.
- 26. Definition of "food."
- 27. Repeal of enactments in schedule.
- 28. Short title and commencement.

SCHEDULE.



7

CHAPTER 51.

An Act to amend the Law relating to the sale of Food and Drugs. A.D. 1899.
[9th August 1899.]

BE it enacted by the Queen's most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows :—

1.—(1.) If there is imported into the United Kingdom any of the following articles, namely :—

(a) margarine or margarine-cheese, except in packages conspicuously marked “Margarine” or “Margarine-cheese,” as the case may require ; or

(b) adulterated or impoverished butter (other than margarine) or adulterated or impoverished milk or cream, except in packages or cans conspicuously marked with a name or description indicating that the butter or milk or cream has been so treated ; or

(c) condensed separated or skimmed milk, except in tins or other receptacles which bear a label whereon the words “Machine-skimmed Milk” or “Skimmed Milk,” as the case may require, are printed in large and legible type ; or

(d) any adulterated or impoverished article of food to which Her Majesty may by Order in Council direct that this section shall be applied, unless the same be imported in packages or receptacles conspicuously marked with a name or description indicating that the article has been so treated ;

the importer shall be liable, on summary conviction, for the first offence to a fine not exceeding twenty pounds, for the second offence to a fine not exceeding fifty pounds, and for any subsequent offence to a fine not exceeding one hundred pounds.

(2.) The word “importer” shall include any person who, whether as owner, consignor, or consignee, agent, or broker, is in possession of, or in anywise entitled to the custody or control of, the article ;

Precautions
against
importation
of agricul-
tural and
other pro-
duce insuffi-
ciently
marked.

A.D. 1899.
39 & 40 Vict.
c. 36.

prosecutions for offences under this section shall be undertaken by the Commissioners of Customs; and subject to the provisions of this Act this section shall have effect as if it were part of the Customs Consolidation Act, 1876.

(3.) The Commissioners of Customs shall, in accordance with directions given by the Treasury after consultation with the Board of Agriculture, take such samples of consignments of imported articles of food as may be necessary for the enforcement of the foregoing provisions of this section.

(4.) Where the Commissioners of Customs take a sample of any consignment in pursuance of such directions they shall divide it into not less than three parts, and send one part to the importer and one part to the principal chemist of the Government laboratories, and retain one part.

(5.) In any proceeding under this section the certificate of the principal chemist of the result of the analysis shall be sufficient evidence of the facts therein stated, unless the defendant require that the person who made the analysis be called as a witness.

(6.) If, in any case, the Commissioners of Customs are of opinion that an offence against this section has been committed, they shall communicate to the Board of Agriculture for their information the name of the importer and such other facts as they possess or may obtain as to the destination of the consignment.

(7.) For the purposes of this section an article of food shall be deemed to be adulterated or impoverished if it has been mixed with any other substance, or if any part of it has been abstracted so as in either case to affect injuriously its quality, substance, or nature.

Provided that an article of food shall not be deemed to be adulterated by reason only of the addition of any preservative or colouring matter of such a nature and in such quantity as not to render the article injurious to health.

Power for
Local
Government
Board or
Board of
Agriculture
to sample
articles of
food.

2.—(1.) The Local Government Board may, in relation to any matter appearing to that Board to affect the general interest of the consumer, and the Board of Agriculture may, in relation to any matter appearing to that Board to affect the general interests of agriculture in the United Kingdom, direct an officer of the Board to procure for analysis samples of any article of food, and thereupon the officer shall have all the powers of procuring samples conferred by the Sale of Food and Drugs Acts, and those Acts shall apply as if the officer were an officer authorised to procure samples under the Sale of Food and Drugs Act, 1875, except that—

(a) the officer procuring the sample shall divide the same into four parts, and shall deal with three of such parts in the

A.D. 1899.

manner directed by section fourteen of the Sale of Food and Drugs Act, 1875, as amended by this Act, and shall send the fourth part to the Board, and

(b) the fee for analysis shall be payable to the analyst by the local authority of the place where the sample is procured.

(2.) The Board shall communicate the result of the analysis of any such sample to the local authority, and thereupon there shall be the like duty and power on the part of the local authority to cause proceedings to be taken as if the local authority had caused the analysis to be made.

3.—(1.) It shall be the duty of every local authority entrusted with the execution of the laws relating to the sale of food and drugs to appoint a public analyst, and put in force from time to time, as occasion may arise, the powers with which they are invested, so as to provide proper securities for the sale of food and drugs in a pure and genuine condition, and in particular to direct their officers to take samples for analysis.

Power for
Local
Government
Board or
Board of
Agriculture
to act in
default of
local
authority.

(2.) If the Local Government Board or Board of Agriculture, after communication with a local authority, are of opinion that the local authority have failed to execute or enforce any of the provisions of the Sale of Food and Drugs Acts in relation to any article of food, and that their failure affects the general interest of the consumer or the general interests of agriculture in the United Kingdom, as the case may be, the Board concerned may, by order, empower an officer of the Board to execute and enforce those provisions or to procure the execution and enforcement thereof in relation to any article of food mentioned in the order.

(3.) The expenses incurred by the Board or their officer under any such order shall be treated as expenses incurred by the local authority in the execution of the said Acts, and shall be paid by the local authority to the Board on demand, and in default the Board may recover the amount of the expenses with costs from the local authority.

(4.) For the purposes of this section an order of the Board shall be conclusive in respect of any default, amount of expenses, or other matter therein stated or appearing.

(5.) Any public analyst appointed under the Sale of Food and Drugs Acts shall furnish such proof of competency as may from time to time be required by regulation framed by the Local Government Board.

4.—(1.) The Board of Agriculture may, after such inquiry as they deem necessary, make regulations for determining what

Power for
Board of
Agriculture

A.D. 1899. deficiency in any of the normal constituents of genuine milk, cream, butter, or cheese, or what addition of extraneous matter or proportion of water, in any sample of milk (including condensed milk), cream, butter, or cheese, shall for the purposes of the Sale of Food and Drugs Acts raise a presumption, until the contrary is proved, that the milk, cream, butter, or cheese is not genuine or is injurious to health, and an analyst shall have regard to such regulations in certifying the result of an analysis under those Acts.

to make regulations as to analysis of milk, cream, butter, or cheese.

(2.) Any regulations made under this section shall be notified in the London and Edinburgh Gazettes, and shall also be made known in such other manner as the Board of Agriculture may direct.

Extension of Margarine Act, 1887, to margarine-cheese. 50 & 51 Vict. c. 29.

5. The provisions of the Margarine Act, 1887, as amended by this Act, shall extend to margarine-cheese, and shall apply accordingly, with the substitution of "margarine-cheese" and "cheese" for "margarine" and "butter," and provided that all margarine-cheese sold or dealt in otherwise than by retail shall either be inclosed in packages marked in accordance with the Margarine Act, 1887, as amended by this Act, or be itself conspicuously branded with the words "margarine-cheese."

Marking of margarine and margarine-cheese.

6.—(1.) Where under this Act or the Margarine Act, 1887, it is required that any package containing margarine or margarine-cheese shall be branded or marked, the brand or mark shall be on the package itself and not solely on a label, ticket, or other thing attached thereto.

(2.) The letters required to be printed on the paper wrapper in which margarine or margarine-cheese is sold shall be capital block letters not less than half an inch long and distinctly legible, and no other printed matter shall appear on the wrapper.

(3.) The words "or with" in section six of the Margarine Act, 1887, shall be repealed.

Provisions as to manufacturers of and dealers in margarine and margarine-cheese.

7.—(1.) Every occupier of a manufactory of margarine or margarine-cheese, and every wholesale dealer in such substances, shall keep a register showing the quantity and destination of each consignment of such substances sent out from his manufactory or place of business, and this register shall be open to the inspection of any officer of the Board of Agriculture.

(2.) Any officer of the Board of Agriculture shall have power to enter at all reasonable times any manufactory of margarine or margarine-cheese, and to inspect any process of manufacture therein, and to take samples for analysis.

(3.) If any such occupier or dealer—

(a) fails to keep such a register, or

(b) refuses to produce the register when required to do so by an officer of the Board of Agriculture, or

(c) fails to keep the register posted up to date, or

(d) wilfully makes any entry in the register which is false in any particular, or

(e) fraudulently omits to enter any particular which ought to be entered in the register,

he shall be liable on summary conviction for the first offence to a fine not exceeding ten pounds, and for any subsequent offence to a fine not exceeding fifty pounds.

(4.) The provisions of section nine of the Margarine Act, 1887, relating to registration of manufactories shall extend to any premises wherein the business of a wholesale dealer in margarine or margarine-cheese is carried on.

(5.) The registration of a manufactory or other premises shall be forthwith notified by the local authority to the Board of Agriculture.

8. It shall be unlawful to manufacture, sell, expose for sale, or import any margarine, the fat of which contains more than ten per cent. of butter fat, and every person who manufactures, sells, exposes for sale, or imports any margarine which contains more than that percentage, shall be guilty of an offence under the Margarine Act, 1887, and any defence which would be a defence under section seven of that Act shall be a defence under this section, and the provisions of the former section shall apply accordingly.

Provided that nothing in this section shall apply to any margarine manufactured or imported in fulfilment of any contract made before the twentieth day of July one thousand eight hundred and ninety-nine.

9. Every person who, himself or by his servant, in any highway or place of public resort sells milk or cream from a vehicle or from a can or other receptacle shall have conspicuously inscribed on the vehicle or receptacle his name and address, and in default shall be liable on summary conviction to a fine not exceeding two pounds.

10. In the case of a sample taken of milk in course of delivery, or of margarine or margarine-cheese forwarded by a public conveyance, the person taking the sample shall forward by registered parcel or otherwise a portion of the sample marked, and sealed, or fastened up, to the consignor if his name and address appear on the can or package containing the article sampled.

A.D. 1899.

50 & 51 Vict.
c. 29.

Restriction
on amount
of butter fat
in margarine.

Provision as
to name and
address of
person
selling milk
or cream
in a public
place.

Division of
samples
taken in
course of
delivery
or transit.

A.D. 1899.

Provisions
as to con-
densed
separated
or skimmed
milk.

11. Every tin or other receptacle containing condensed separated or skimmed milk must bear a label clearly visible to the purchaser on which the words "Machine-skimmed Milk," or "Skimmed Milk," as the case may require, are printed in large and legible type, and if any person sells or exposes or offers for sale condensed separated or skimmed milk in contravention of this section he shall be liable on summary conviction to a fine not exceeding ten pounds.

Notice of
mixtures.
38 & 39
Vict. c. 63.

12. The label referred to in section eight of the Sale of Food and Drugs Act, 1875, shall not be deemed to be distinctly and legibly written or printed within the meaning of that section unless it is so written or printed that the notice of mixture given by the label is not obscured by other matter on the label: Provided that nothing in this enactment shall hinder or affect the use of any registered trade mark, or of any label which has been continuously in use for at least seven years before the commencement of this Act; but the Comptroller-General of Patents, Designs, and Trade Marks shall not register any trade mark purporting to describe a mixture unless it complies with the requirements of this enactment.

Amendment
of 38 & 39
Vict. c. 63.
as to samples.

13. In section fourteen of the Sale of Food and Drugs Act, 1875, the words "offer to" and the words "proceed accordingly and shall" shall be repealed.

Taking
samples in
course of
delivery.
42 & 43 Vict.
c. 20.

14. The provisions of section three and section four of the Sale of Food and Drugs Act Amendment Act, 1879 (relating to the taking of samples of milk in course of delivery), shall apply to every other article of food: Provided that no samples shall be taken under this section except upon the request or with the consent of the purchaser or consignee.

Amendment
of 38 & 39
Vict. c. 63.
as to regis-
tered parcels.

15. In section sixteen of the Sale of Food and Drugs Act, 1875, the words "registered parcel" shall be substituted for the words "registered letter."

Obstruction
of officer in
discharge of
his duties.

16. Any person who wilfully obstructs or impedes any inspector or other officer in the course of his duties under the Sale of Food and Drugs Acts, or by any gratuity, bribe, promise, or other inducement prevents, or attempts to prevent, the due execution by such inspector or officer of his duty under those Acts, shall be liable, on summary conviction, for the first offence to a fine not exceeding twenty pounds, for the second offence to a fine not exceeding fifty pounds, and for any subsequent offence to a fine not exceeding one hundred pounds.

17.—(1.) Where, under any provision of the Sale of Food and Drugs Act, 1875, a person guilty of an offence is liable to a fine which may extend to twenty pounds as a maximum, he shall be liable for a second offence under the same provision to a fine not exceeding fifty pounds, and for any subsequent offence to a fine not exceeding one hundred pounds.

A.D. 1899.
Penalties for offences under the Sale of Food and Drugs Acts.

(2.) Where, under any provision of the Sale of Food and Drugs Acts, a person guilty of an offence is liable to a fine exceeding fifty pounds, and the offence, in the opinion of the court, was committed by the personal act, default, or culpable negligence of the person accused, that person shall be liable (if the court is of opinion that a fine will not meet the circumstances of the case) to imprisonment, with or without hard labour, for a period not exceeding three months.

18. Notwithstanding anything in section seventeen of the Sale of Food and Drugs Act, 1875, where any article of food or drug is exposed for sale in an unopened tin or packet duly labelled, no person shall be required to sell it except in the unopened tin or packet in which it is contained.

Articles sold in tins or packets.
38 & 39 Vict. c. 63.

19.—(1.) When any article of food or drug has been purchased from any person for test purposes, any prosecution under the Sale of Food and Drugs Acts in respect of the sale thereof, notwithstanding anything contained in section twenty of the Sale of Food and Drugs Act, 1875, shall not be instituted after the expiration of twenty-eight days from the time of the purchase.

Time for proceeding and regulation as to summons.

(2.) In any prosecution under the Sale of Food and Drugs Acts the summons shall state particulars of the offence or offences alleged, and also the name of the prosecutor, and shall not be made returnable in less time than fourteen days from the day on which it is served, and there must be served therewith a copy of any analyst's certificate obtained on behalf of the prosecutor.

20.—(1.) A warranty or invoice shall not be available as a defence to any proceeding under the Sale of Food and Drugs Acts unless the defendant has, within seven days after service of the summons, sent to the purchaser a copy of such warranty or invoice with a written notice stating that he intends to rely on the warranty or invoice, and specifying the name and address of the person from whom he received it, and has also sent a like notice of his intention to such person.

Provisions as to use of warranty or invoice as defence, and proceedings against the warrantor.

(2.) The person by whom such warranty or invoice is alleged to have been given shall be entitled to appear at the hearing and to give evidence, and the court may, if it thinks fit, adjourn the hearing to enable him to do so.

A.D. 1899.

(3.) A warranty or invoice given by a person resident outside the United Kingdom shall not be available as a defence to any proceeding under the Sale of Food and Drugs Acts, unless the defendant proves that he had taken reasonable steps to ascertain and did in fact believe in the accuracy of the statement contained in the warranty or invoice.

38 & 39 Vict.
c. 67.
50 & 51 Vict.
c. 29.

(4.) Where the defendant is a servant of the person who purchased the article under a warranty or invoice he shall, subject to the provisions of this section, be entitled to rely on section twenty-five of the Sale of Food and Drugs Act, 1875, and section seven of the Margarine Act, 1887, in the same way as his employer or master would have been entitled to do if he had been the defendant, provided that the servant further proves that he had no reason to believe that the article was otherwise than that demanded by the prosecutor.

(5.) Where the defendant in a prosecution under the Sale of Food and Drugs Acts has been discharged under the provisions of section twenty-five of the Sale of Food and Drugs Act, 1875, as amended by this Act, any proceedings under the Sale of Food and Drugs Acts for giving the warranty relied on by the defendant in such prosecution, may be taken as well before a court having jurisdiction in the place where the article of food or drug to which the warranty relates was purchased for analysis as before a court having jurisdiction in the place where the warranty was given.

(6.) Every person who, in respect of an article of food or drug sold by him as principal or agent, gives to the purchaser a false warranty in writing, shall be liable on summary conviction, for the first offence, to a fine not exceeding twenty pounds, for the second offence to a fine not exceeding fifty pounds, and for any subsequent offence to a fine not exceeding one hundred pounds, unless he proves to the satisfaction of the court that when he gave the warranty he had reason to believe that the statements or descriptions contained therein were true.

Duty of
court to send
article for
analysis.
38 & 39 Vict.
c. 63.

21. The justices or court referred to in section twenty-two of the Sale of Food and Drugs Act, 1875, shall on the request of either party under that section cause an article of food or drug to be sent to the Commissioners of Inland Revenue for analysis, and may, if they think fit, do so without any such request.

Provisions
as to
certificates
of analysis.

22.—(1.) At the hearing of the information in any proceeding under the Sale of Food and Drugs Acts, the production by the defendant of a certificate of analysis by a public analyst in the form prescribed in section eighteen of the Sale of Food and Drugs Act,

1875, shall be sufficient evidence of the facts therein stated, unless the prosecutor requires that the analyst be called as a witness. A.D. 1899.

(2.) A copy of every such certificate shall be sent to the prosecutor at least three clear days before the return day, and if it be not so sent the court may, if it thinks fit, adjourn the hearing on such terms as may seem proper.

23. This Act shall apply to Scotland with the substitution for "the Local Government Board" of "the Local Government Board for Scotland," and all powers and duties vested in or imposed on the Secretary for Scotland in relation to the Sale of Food and Drugs Acts shall be transferred to, vested in, or imposed on the Local Government Board for Scotland. Transfer of powers from Secretary for Scotland to Local Government Board.

24. This Act shall apply to Ireland with the substitution for "the Board of Agriculture" of "the Department of Agriculture and Technical Instruction for Ireland," and for "the Local Government Board" of "the Local Government Board for Ireland," and for "the London and Edinburgh Gazettes" of "the Dublin Gazette." Application to Ireland.

25. In this Act, unless the context otherwise requires—

Interpretation of terms.

The expression "margarine-cheese" means any substance, whether compound or otherwise, which is prepared in imitation of cheese, and which contains fat not derived from milk :

The expression "cheese" means the substance usually known as cheese, containing no fat derived otherwise than from milk :

The expression "local authority" means any local authority authorised to appoint an analyst for the purposes of the Sale of Food and Drugs Acts, and the expression "public analyst" means an analyst so appointed :

Other expressions have the same meaning as in the Sale of Food and Drugs Acts, and an offence under this Act shall be treated as an offence under those Acts.

26. For the purposes of the Sale of Food and Drugs Acts the expression "food" shall include every article used for food or drink by man, other than drugs or water, and any article which ordinarily enters into or is used in the composition or preparation of human food; and shall also include flavouring matters and condiments. Definition of "food."

27. The enactments in the schedule to this Act are hereby repealed to the extent mentioned in the third column of that schedule. Repeal of enactments in schedule.

A.D. 1899.
Short title
and com-
mencement,
38 & 39 Vict.
c. 63.
42 & 43 Vict.
c. 30.
50 & 51 Vict.
c. 29.

28.—(1.) This Act may be cited as the Sale of Food and Drugs Act, 1899, and the Sale of Food and Drugs Act, 1875, and the Sale of Food and Drugs Act Amendment Act, 1879, and the Margarine Act, 1887, and this Act may be cited collectively as the Sale of Food and Drugs Acts, 1875 to 1899, and are in this Act referred to as the Sale of Food and Drugs Acts.

(2.) This Act shall come into operation on the first day of January one thousand nine hundred.

SCHEDULE.

ENACTMENTS REPEALED.

Session and Chapter.	Short Title.	Extent of Repeal.
38 & 39 Vict. c. 63. -	The Sale of Food and Drugs Act, 1875.	In section two, the definition of the term "food." In section fourteen, the words "offer to," and the words "proceed accordingly and shall." Section fifteen. In section twenty seven, the words from "Every person who shall give a false warranty in writing" to "a penalty not exceeding twenty pounds."
42 & 43 Vict. c. 30. -	The Sale of Food and Drugs Act Amendment Act, 1879.	Section ten.
50 & 51 Vict. c. 29. -	The Margarine Act, 1887.	In section six, the words "or with," and the words "not less than a quarter of an inch square."
54 & 55 Vict. c. 46. -	The Post Office Act, 1891.	Section eleven.

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A.D. 1899.
 Short title
 and com-
 mencement,
 38 & 39 Vict.
 c. 63.
 42 & 43 Vict.
 c. 30.
 50 & 51 Vict.
 c. 29.

28.—(1.) This Act may be cited as the Sale of Food and Drugs Act, 1899, and the Sale of Food and Drugs Act, 1875, and the Sale of Food and Drugs Act Amendment Act, 1879, and the Margarine Act, 1887, and this Act may be cited collectively as the Sale of Food and Drugs Acts, 1875 to 1899, and are in this Act referred to as the Sale of Food and Drugs Acts.

(2.) This Act shall come into operation on the first day of January one thousand nine hundred.

SCHEDULE.

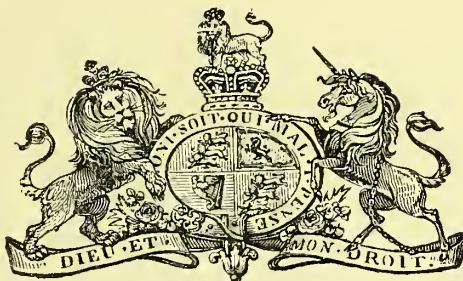
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GENERAL ORDER.Sale of Food and Drugs Acts, 1875 to 1899.Appointment of Public Analyst: Regulation as to Competency.

To the several Local Authorities for the
time being required by law to appoint a Public
Analyst; —

And to all others whom it may concern.

WHEREAS by the Sale of Food and Drugs Acts provision is made for the appointment by certain Local Authorities of persons to act as Analysts of all articles of Food and Drugs, and every such appointment is made subject to the approval of the Local Government Board;

And whereas by sub-sections (1) and (5) of Section 3 of the Sale of Food and Drugs Act, 1899 (herein-after referred to as "the Act"), it is enacted as follows:—

" (1.) It shall be the duty of every local authority entrusted
" with the execution of the laws relating to the sale of food
" and drugs to appoint a public analyst * * * * "

" (5.) Any public analyst appointed under the Sale of Food
" and Drugs Acts shall furnish such proof of competency as may
" from time to time be required by regulation framed by the
" Local Government Board."

And whereas by Section 25 of the Act it is enacted as follows:—

" In this Act unless the context otherwise requires—
* * * * *

" The expression 'local authority' means any local authority
" authorised to appoint an analyst for the purposes of the Sale
" of Food and Drugs Acts, and the expression 'public analyst'
" means an analyst so appointed."

NOW THEREFORE, We, the Local Government Board,
in pursuance of the powers given to Us by sub-section (5) of

Section 3 of the Act, do hereby Order that the following regulation shall have effect ; that is to say,—

Every person appointed on or after the First day of January, One thousand nine hundred, to the office of Public Analyst shall furnish such proof as We may deem sufficient of his competent skill in and knowledge of (a) analytical chemistry, (b) therapeutics, and (c) microscopy.

Such proof shall in every case comprise documentary evidence that such person holds the requisite certificate, diploma, licence, or document conferring the qualification or attesting his possession of the skill or knowledge to which the same applies, and granted or issued by any person or body of persons for the time being recognised by Us as competent to confer such qualification or to test such skill or knowledge. Such proof shall also comprise such further evidence as We may in any particular case require.

All such documentary evidence as is herein-before mentioned shall be furnished by such person to the Local Authority by whom he is appointed and shall be transmitted to Us by the Local Authority when applying for Our approval of the appointment :

Provided that nothing in this Regulation contained shall, in the case of any person who was appointed to the office of Public Analyst with Our approval between the First day of January, One thousand eight hundred and ninety-one, and the date hereof, or of any person who is so appointed for the first time after such last-mentioned date, apply upon any subsequent appointment of such person to the said office.

Given under the Seal of Office of the Local Government Board, this Seventh day of March, in the year One thousand nine hundred.



Henry Chaplin

President.

S. B. Provis.

Secretary.



9

Public Analysts : Regulation as to Competency.

LOCAL GOVERNMENT BOARD,
WHITEHALL, S.W.,

8th March, 1900.

SIR,

I am directed by the Local Government Board to draw attention to the provisions of sub-sections (1) and (5) of Section 3 of the Sale of Food and Drugs Act, 1899 (62 & 63 Vict., c. 51). The former sub-section provides that it shall be the duty of every Local Authority entrusted with the execution of the laws relating to the sale of food and drugs to appoint a public analyst, and the latter that any public analyst appointed under the Sale of Food and Drugs Acts shall furnish such proof of competency as may from time to time be required by regulation framed by the Board.

The Board have issued an Order, of which two copies are enclosed, prescribing the regulation which they have framed under the above enactment.

It will be observed that the regulation requires that every person appointed on or after the First day of January, 1900, to the office of Public Analyst shall furnish such proof as the Board may deem sufficient of his competent skill in and knowledge of (a) analytical chemistry, (b) therapeutics, and (c) microscopy; and the Order proceeds to indicate the nature of the documentary evidence to be comprised in such proof. Such evidence of competency is to be furnished by the Public Analyst to the Local Authority by whom he is appointed; and it is to be transmitted to the Board by that Authority when applying for the Board's approval of the appointment.

In the case, however, of any person who was appointed to the office of Public Analyst with the approval of the Board between 1st January, 1891, and the date of the Order, or who is appointed to that office for the first time after the last-mentioned date, the regulation will not apply in the event of his subsequent appointment as Public Analyst.

Order No. 40670.
2 Copies.

As regards the reference in the Order to a person or body of persons whom the Board may from time to time recognize as competent to confer the requisite qualification or to test the skill or knowledge of which proof is required by the Order, the Board may state that it would accord with their existing practice to accept as sufficient documentary evidence of the requisite qualification under the Acts, the Diploma of Fellowship or Associateship of the Institute of Chemistry of Great Britain and Ireland, together with the Certificate granted by the Institute after an examination, conducted by them on lines approved by the Board, in Therapeutics, Pharmacology, and Microscopy.

The possession of a diploma as a registered medical practitioner is accepted as sufficient proof of competency in microscopy and therapeutics, and it would only be necessary that a medical practitioner appointed as a Public Analyst should furnish evidence of competent skill in and knowledge of analytical chemistry.

Evidence of skill or knowledge on the part of a candidate in respect of any of the qualifications referred to as requisite, which is tendered by an individual, must be from a person recognised as entitled to speak with authority as to proficiency in the particular qualification in question.

The term "Local Authority" is used in the Order with the meaning assigned to it by Section 25 of the Sale of Food and Drugs Act, 1899, that is to say: "Any Local Authority authorised to appoint an Analyst for the purposes of the Sale of Food and Drugs Acts." The Section also provides that "the expression 'Public Analyst' means an analyst so appointed."

I am, Sir,

Your obedient Servant,

L. B. Davis.

Secretary.

The Clerk to the Local Authority.

ISOLATION HOSPITALS.

10

MEMORANDUM for the guidance of Local Authorities in applying to the Local Government Board for sanction to loans for the provision of Isolation Hospitals; for the constitution of Joint Hospital Districts; and in proceedings under the Isolation Hospitals Act, 1893.

(a) Under the Public Health Act, 1875.

1. Under Section 131 of the Public Health Act, 1875 :—

“Any local authority may provide for the use of the inhabitants of their district hospitals or temporary places for the reception of the sick, and for that purpose may themselves build such hospitals or places of reception; or contract for the use of any such hospital or part of a hospital or place of reception; or enter into any agreement with any person having the management of any hospital, for the reception of the sick inhabitants of their district, on payment of such annual or other sum as may be agreed on.

“Two or more local authorities may combine in providing a common hospital.”

Provision of Hospitals by Local Authorities.

2. If a local authority desire to obtain a loan to defray the cost of providing a hospital, the sanction of the Local Government Board must be obtained (Public Health Act, 1875, sections 233 and 234). Any provisional agreement entered into by the local authority for the purchase of land as a site for the hospital should be made conditional upon such sanction being given.

3. Any application to the Board for sanction to a loan should be accompanied by :—

(1) A copy of the local authority's resolution directing the application to be made ;

(2) Detailed estimates* of the cost of the proposed works ;

(3) A map (say on the scale of one inch to the mile) showing the boundaries of the sanitary district or districts for which the hospital is to serve, the parish and sanitary district in which the site is comprised, the position of the proposed hospital site, and the means of access to the site from the various parts of the district or districts ; and

(4) A further map on a larger scale (say on the scale of 25 inches to the mile,) or plan showing the area and shape of the proposed site, and its relation to houses and lands in its immediate vicinity, and showing also the points of the compass ;

(5) Plans of the proposed hospital buildings, in cases where the application includes the cost of such buildings ;

(6) A statement showing the number of persons residing within a quarter of a mile and half a mile, respectively, from the site ;

* The Board have not prescribed any form in which these estimates are to be sent.

(7) Information as to the available water supply and the proposed means for disposing of the sewage of the hospital ; and

(8) Particulars (in forms which the Board supply on application) respecting the assessable value and the existing debt for sanitary purposes of the district or districts.

4. The plans of the hospital buildings should be submitted to the Board at an early stage of their preparation. If they are not found to be satisfactory, the Board are usually willing to arrange for a conference on the subject at their office, between representatives of the local authority (accompanied by their Architect and Medical Officer of Health) and representatives of the Board's Medical and Architectural Departments.

5. Before sanctioning a loan the Board usually cause a public local inquiry into the matter to be held in the district by one of their Inspectors, at which any person interested may attend and give evidence. Due public notice of any such inquiry is given in the locality concerned.

Provision of Hospitals by two or more Local Authorities acting in combination.

6. When two or more local authorities desire to combine in providing a hospital, it is often desirable to form the combined districts into a Joint Hospital District, by a Provisional Order under Section 279 of the Public Health Act, 1875, with a Joint Hospital Board as the governing body.

A Joint Hospital Board consists of members elected by the local authorities concerned, together with such ex-officio members as the Local Government Board may by the Provisional Order determine (Section 280, Public Health Act, 1875).

Joint Boards exercise their powers independently of the local authorities comprised within the United District.

By Section 244 of the Public Health Act they are enabled to borrow money, and under Section 280 a Joint Board is a body corporate with power to hold lands for the purposes of their constitution.

They are also empowered to issue precepts to the local authorities within the United District, for the sums to be contributed by such authorities towards the expenses of the Joint Board, and, in case of default, to proceed in a summary manner to raise such sums.

Moreover, by the Provisional Order constituting the United District the Joint Board are directly invested with various powers in relation to their meetings and officers, conduct of business, contracts, purchase of land either by agreement or compulsorily, arbitration, audit of accounts, legal proceedings, and with any other powers which the special circumstances of the case may require, so as to enable them to perform their duties in the most convenient and efficient manner.

7. Applications to the Board for the issue of Provisional Orders forming United Districts for hospital purposes should be accompanied by copies of resolutions of the local authorities concerned, and should be made as soon as practicable after the *1st October* in each year.

8. Applications for loans by Joint Hospital Boards should be made in the manner indicated in paragraphs 3 to 5 of this memorandum.

(b) Under the Isolation Hospitals Act, 1893.

9. Under the Isolation Hospitals Act, 1893, County Councils are empowered to constitute hospital districts, consisting in each case either of a single local area or of two or more local areas as defined by section 26 of the

Act; and under section 8 (3) "if any local authority, having jurisdiction within any part of the proposed hospital district, object to the formation of such a district, or to the addition or subtraction thereto or therefrom of any local area within their jurisdiction, such authority may at any time within three months from the date of the order appeal to the Local Government Board, and the decision of such Board shall be conclusive."

10. Under section 22 of the Act "a County Council may borrow on the security of the county rate, and in manner provided by the Local Government Act, 1888, any money required for the purpose of carrying into effect the provisions of this Act." The sanction of the Local Government Board is required to any such borrowing by a County Council.

11. Hospital Committees, and the local authorities having jurisdiction in the areas included within a hospital district set up by a County Council, are not empowered themselves to borrow money for the purposes of the Isolation Hospitals Act; but under section 22 of that Act any loans borrowed by a County Council to carry the provisions of the Act into effect, "and any other money expended by them for the purposes of this Act, together with interest thereon at the rate of four pounds per centum per annum, shall be repaid to the County Council out of the local rate," as in the Act directed.

12. In dealing with applications from County Councils for sanction to loans under this Act, the Board act upon the principles which guide them in dealing with applications by local authorities for sanction to borrow money for hospital purposes under the Public Health Act.

Local Government Board,
Whitehall,
April 1900.

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1900.

ON THE PROVISION OF ISOLATION HOSPITAL ACCOMMODATION BY LOCAL AUTHORITIES.

This memorandum is designed to represent to those who are responsible for the health of communities the importance of providing hospital accommodation for the isolation of cases of infectious disease, and of doing so before the actual invasion of their districts by such disease. It is further intended to indicate to local authorities, more especially to those of districts of small or moderate size, the means by which they may most advantageously make such provision. Some general principles to be held in view by all authorities who propose to provide by means of loans sanctioned by the Local Government Board, isolation hospitals for their districts will be set forth in the course of the memorandum. Those in italics are points which the Board regard as indispensable.

The provision of hospital accommodation for cases of infectious diseases is to be regarded primarily as a measure of sanitary defence, for the protection of the public against the spread of these diseases. It is true that such accommodation incidentally serves other useful purposes. Thus, it is frequently of value for the relief of individuals suffering from infectious disease, whose sufferings may be alleviated and their recovery promoted by affording them better accommodation and attendance than they are able to obtain at their own homes. Or it may be the means of avoiding serious inconvenience and pecuniary loss, as when infectious disease breaks out in a school, a lodging house, or a place of business. But, nevertheless, the most important function which such a hospital serves is that of the isolation of the first cases of infectious disease with a view to preventing its further spread in the household or locality invaded.

In order that a hospital may fulfil this function it is essential that it should be in readiness beforehand. Experience has shown that on the invasion of an epidemic, a hospital, even of a temporary kind, can seldom be provided and got ready for use until the time when it would have been of most service is past. The accommodation, moreover, which is required when an epidemic has become established is on a larger scale than would have sufficed for the isolation of the first cases ; and hospitals hurriedly erected during the stress of an epidemic are never satisfactory in construction or suited to the permanent needs of the district.

An isolation hospital being intended primarily for the protection of the public at large rather than for the benefit of individuals, it is undesirable that admission should be subject to restrictive charges and conditions which may tend to prevent the use of the hospital by the poorer portion of the community ; that is to say, by those who have the least facilities for isolation and treatment at their own homes. In some districts, however, *e.g.*, at health resorts, it may be advisable to provide special accommodation of a superior kind, such as private wards, for persons willing to pay for it.

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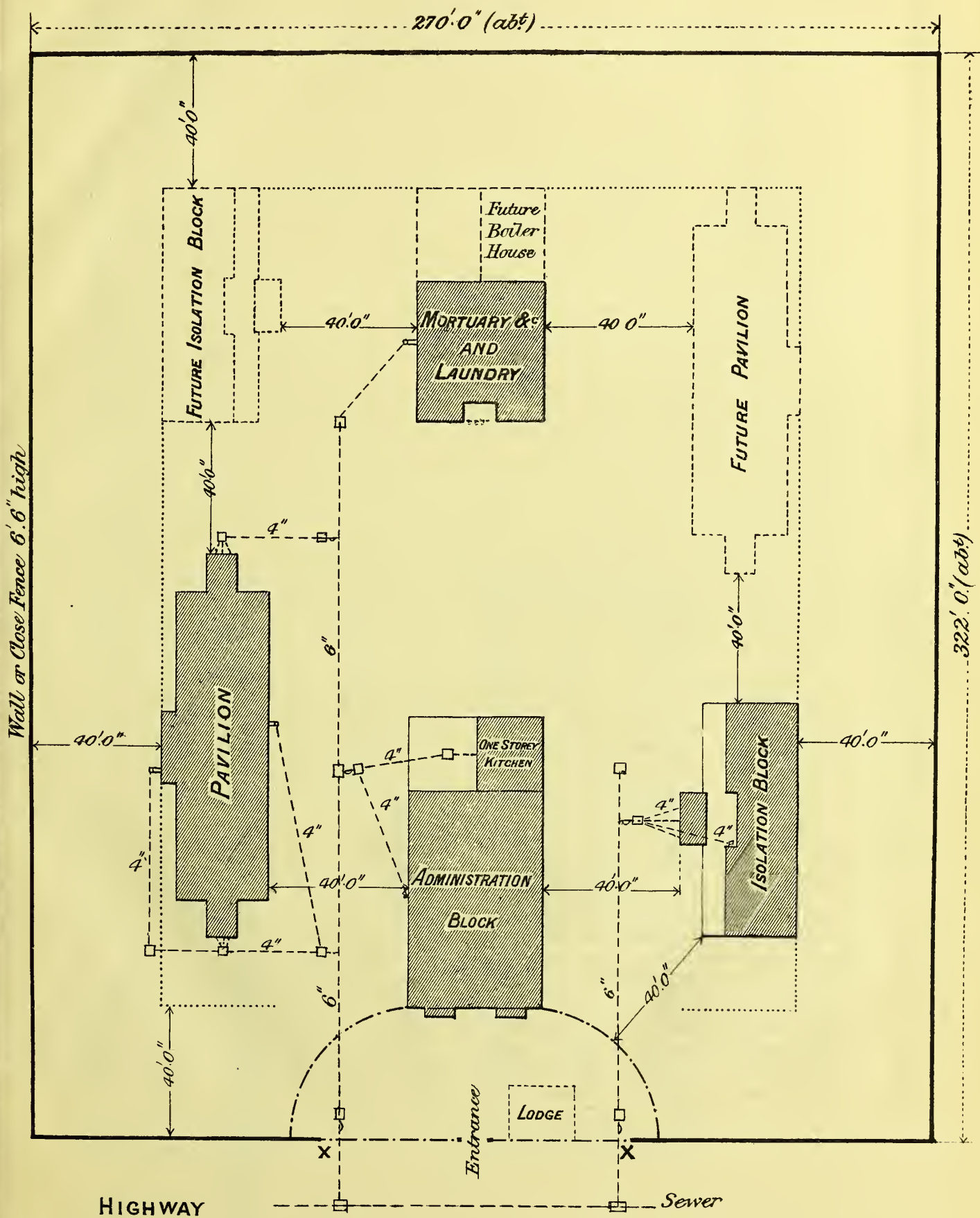
Area to be served by a hospital.—The extent of area for which an isolation hospital may serve will depend in some degree upon considerations of local topography. If the area be too large the usefulness of the hospital will be diminished, owing to the difficulties attending the conveyance of patients over long distances. But, on the other hand, the unnecessary multiplication of small hospitals is to be avoided on grounds both of economy and of efficiency. As compared with that of several smaller hospitals, the establishment of a single hospital containing an equal number of beds saves the cost of duplicating various buildings, appliances, and officers; it facilitates the classification of patients according to the diseases from which they are suffering; and it enables a more efficient staff to be maintained, since the hospital is less likely to remain empty for considerable periods. Hence, where districts are not very large or populous, combination for the purpose of providing hospital accommodation is often of advantage. In the less densely populated parts of the country, a market town with the surrounding rural district, or the several sanitary districts comprised in one poor law union, may form a convenient area for the purpose of combined hospital provision. A hospital intended solely for small-pox may serve a larger area than a hospital for other infectious diseases. The modes by which local authorities may combine for the provision of hospitals are set forth in an office memorandum on "Isolation Hospitals," which may be obtained on application, for the guidance of local authorities desirous of such combination or of establishing hospitals under the sanction of the Local Government Board.

Size of Hospital in proportion to population.—The amount of permanent isolation hospital accommodation which should be provided in proportion to the population will depend upon various considerations, among the most important of which are the character of the district, whether urban or rural; the rate of increase of population; the housing and the habits of the people; and the amount of intercourse with other places from which infectious disease may be introduced. As a rough estimate, one bed for every thousand inhabitants is sometimes adopted, but in view of the diverse circumstances of different districts this cannot be regarded as a definite standard. Moreover, the sufficiency of the hospital accommodation will depend not merely upon the aggregate number of beds, but also upon the way in which they are arranged in wards. In a single block with wards connected together only one disease can safely be treated at a time; and thus, at a hospital containing only one such block, occasions may arise when, owing to the hospital being partly occupied by one disease, a case of a second disease requiring isolation cannot safely be taken in, although there may be a number of beds empty at the time.

It is common to find that the demand for hospital accommodation, when people have come to appreciate the benefits of its use, increases far beyond what was at first anticipated; and for this reason, as well as to allow for growth of the population and for the possible need for temporary extensions during epidemics, it is well at the outset to provide for the contingency of future enlargement.

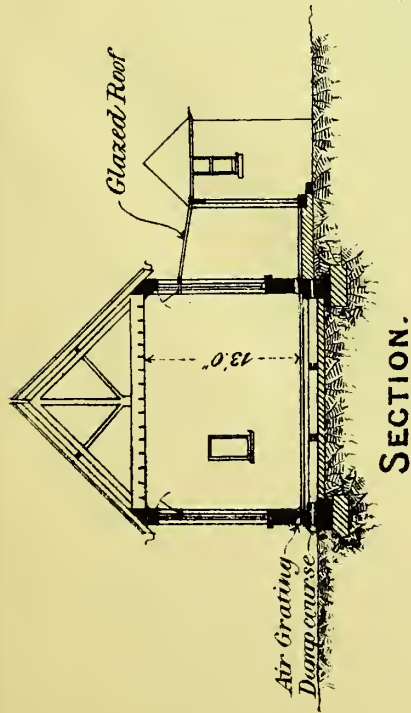
Site.—In selecting a site for an isolation hospital the following considerations should be had in view:—It should be convenient of access, and, as far as practicable, central for the population and area which it is to serve; but of course not in a very populous neighbourhood. (In the case of hospitals in which small-pox is intended to be received the choice of site must be specially governed by considerations as to the number of inhabitants in the neighbourhood, which will be referred to later on.) It will be of much convenience if sewers and a public water service are available; but, if not, a sufficient supply of wholesome water must be provided, and arrangements will have to be made for the treatment of the sewage by application to land, due care being taken to avoid pollution of any well or spring or of any river. The site should be in a healthy and open situation with a dry subsoil, and should be preferably of a compact and regular shape, and not too steep. Its area will depend upon the size of the hospital, and, except in the case of a very small hospital, should rarely be less than two acres; indeed it is well to obtain a larger site than may at first be required, in order to afford space for subsequent extension if necessary. More land, too, will be needed if the sewage has to be disposed of on the site. *The site, or so much of it as is to form the grounds of the hospital, should be enclosed*

BLOCK PLAN.



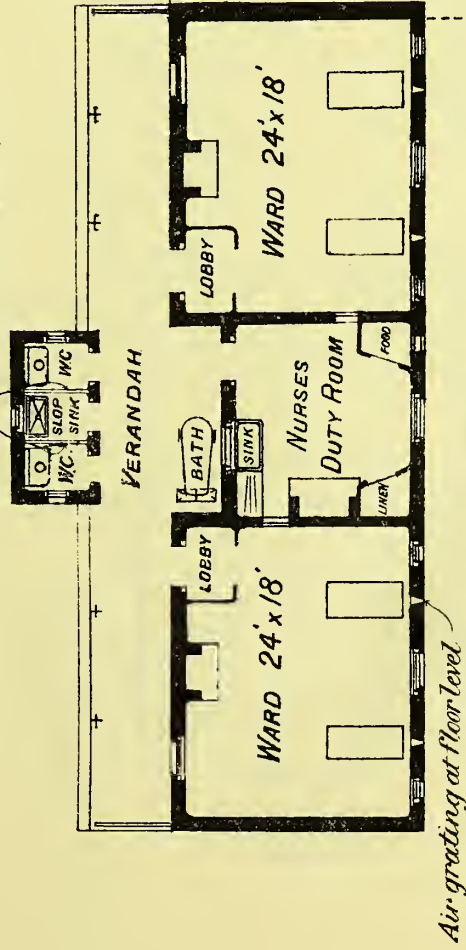
Scale: 40 feet to One Inch.





NOTES. In a double block on this pattern the entrances and verandahs should be on alternate sides as here illustrated. If the verandahs are enclosed it should be only by a movable screen so arranged that it can be taken away altogether as circumstances require.

Dwarf partition 6'6" high and 6" off the floor

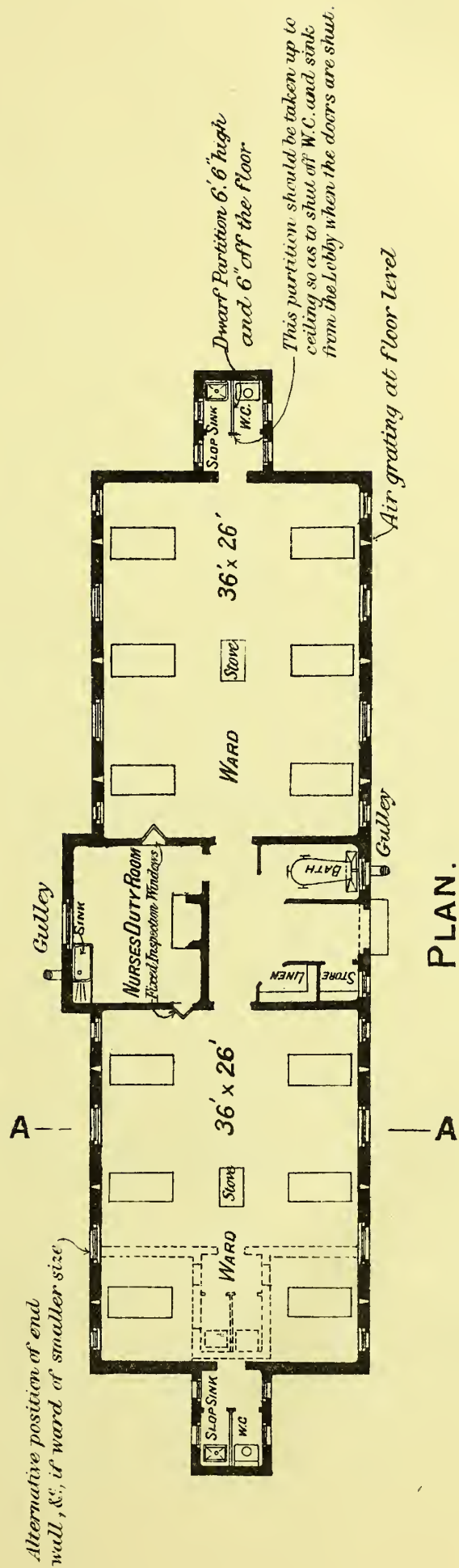
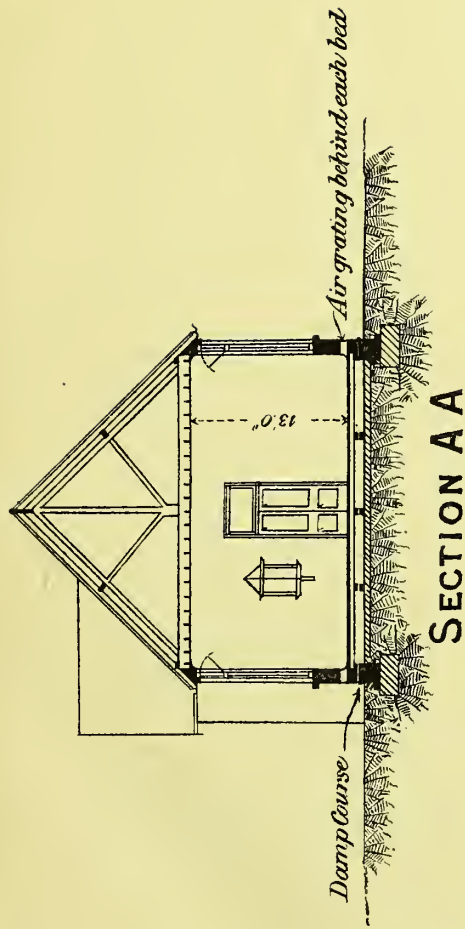


PLAN.

Scale, 16 feet to One Inch.

B





Scale, 16 feet to One Inch.



by a wall or close fence at least 6 feet 6 inches in height, and every building which is to contain infected persons or things should be at least 40 feet distant from the boundary.*

Hospital buildings.—These should be of three classes, viz. : 1st, ward-blocks for the reception of the sick ; 2nd, administration-block for the housing of the staff and stores ; and 3rd, out-offices, as laundry and mortuary. In hospitals for permanent use these buildings should be of brick or stone. Temporary buildings, as, for instance, buildings constructed of wood or corrugated iron, are ill suited for permanent use as hospitals, for the reason that it is difficult to maintain them at a proper temperature during extremes of hot and cold weather ; moreover they are less durable than brick or stone buildings, requiring more frequent repairs in order to keep them in a properly weather-proof condition, and they are liable to be destroyed by fire and storm. *It is not the practice of the Local Government Board in ordinary cases to sanction loans for iron hospitals or for hospital buildings of temporary character.*

Existing buildings originally designed for a different purpose such as dwelling houses, even when of large size, are rarely found to be well adapted for the reception of patients ; especially for the accommodation at one time of patients suffering from different infectious diseases. An existing house, however, may sometimes serve as the administration-block, if it have sufficient land attached on which to erect ward-blocks.

The *administration-block*, which should be kept free from patients and infected articles, should be so placed as to control the entrance to the hospital grounds, unless a porter's lodge is intended to be erected. It should contain quarters for the matron or caretaker, and a sufficient number of bed-rooms for the nurses and servants who will be required to work the hospital when in full operation ; also a nurses' sitting room ; a kitchen (preferably in a one-storey projection with top ventilation), store-rooms, dispensary, &c. In hospitals of considerable size quarters for a resident medical officer will also be necessary. It is well to provide in the administration-block accommodation on a scale somewhat in excess of what may be at first required, in order that it may be available for future extensions of the hospital, temporary or permanent ; but in any case the block should be so planned that it can be easily enlarged in the future if necessary.

The *ward-blocks* should be one-storey buildings, unless where in exceptional cases or at large hospitals exigencies of space may render it necessary to construct blocks of two storeys ; in such case each storey should have a separate entrance from the open air. The annexed plans illustrate two different types of ward-block suitable for small or moderate sized hospitals. The type illustrated in plan C is the most advantageous, as regards both cost of construction and convenience of administration, where a number of patients of both sexes suffering from the same disease have to be treated at one time. The number of beds in each ward will vary with the requirements of the district, and it is sometimes found desirable to make one ward rather larger than the other, as indicated on the plan, in order that young children of both sexes may be treated in the women's ward.

Plan B shows a ward-block with small wards separately entered from the open air under a verandah. Accommodation of this kind is useful not only for cases of a second disease, but also under a variety of circumstances, as for the keeping under observation of a case of doubtful nature ; for the segregation of a complicated, noisy, or offensive case ; or as private wards for paying patients, &c.

For very large hospitals other types of ward may be found of advantage.

In the ward-blocks each bed must have at least 12 linear feet of wall space, 144 square feet of floor space, and 2,000 cubic feet of air space. In calculating the latter any height of wards above 13 feet should not be taken into account. The walls should be of adequate thickness ; and the inner face of the walls as well as the floors and woodwork should be constructed with smooth impervious

* If desired, an open unclimbable railing may be substituted for a wall or close fence for so much of the boundary as is within supervision and control from the administration block or porter's lodge, as between the points X-X on the annexed block plan A, but in that case a second line of unclimbable fence should be constructed within the first, as indicated on the plan.

surfaces and rounded angles, so as to facilitate cleanliness and to avoid spaces which may harbour dust and dirt. Ventilation should be by windows on opposite sides of the ward; the windows should be double-hung sashes with fanlight above, and the fanlight should be made to fall inwards, hopper-fashion, with side cheeks to prevent down draughts. The area of the windows should be sufficient but not excessive; one square foot of window to every 70 cubic feet of ward space is a suitable proportion. The best aspect for the ward-blocks is usually with the windows facing respectively south-east and north-west. The wards should have adequate means of warming, which may with advantage be so contrived as to furnish a supply of warm fresh air. An ample supply of hot water for baths should be provided, and bath-rooms should be capable of being warmed. The closets and slop-sinks should be placed in annexes separated from the wards by cross-ventilated lobbies. The closets should be water-closets where practicable; and the slop-sinks should be of an appropriate pattern adapted to receive the solid and liquid contents of bed-pans, the waste-pipe being 3 inches in diameter and arranged similarly to the soil-pipe of a water-closet.

The *out-offices* will comprise such buildings as laundry, disinfecting-chamber, mortuary and ambulance-shed; and in large establishments a boiler-house and engine-house may be needed. Except in very small hospitals, the laundry should comprise a wash-house, a drying-closet, and an ironing-room. An apparatus should be provided for the disinfection by steam of bedding and articles which cannot be washed. The mortuary should be in a cool and unobtrusive position, and should be lighted from the north only.

A discharging-block is not unfrequently provided, consisting of an undressing-room, a bath-room, and a dressing-room, in which convalescents may take their final bath and put on clean clothes before leaving the hospital.

Each building which is to contain infected persons or things should be at least 40 feet distant from any of the other buildings.

The drains of each block should be trapped from the common drain and ventilated separately by an inlet just above the trap and by ventilating shafts at their highest points.

The annexed block plan A illustrates the arrangement upon a rectangular site of about 2 acres of a hospital containing 16 beds, in two ward blocks with administration-block and out-offices; space being also reserved for future extensions. The best arrangement of the buildings will, however, in practice largely depend upon the shape and contour of the site.

If, owing to the bleakness of the site, it is considered desirable that the several blocks should be connected by covered ways, these should not be enclosed, but should be open at the sides. A screen for protection against wind and driving rain may be provided if desired.

Hospitals for small-pox.—In view of the frequently demonstrated liability of small-pox hospitals to disseminate that disease to neighbouring communities, and in order to lessen the risk of such occurrence, the Board require the following conditions to be complied with in the case of small-pox hospitals provided by means of loans sanctioned by them:—

1st. *The site must not have within a quarter of a mile of it either a hospital, whether for infectious diseases or not, or a workhouse, asylum, or any similar establishment, or a population of as many as 200 persons.*

2nd. *The site must not have within half a mile of it a population of as many as 600 persons, whether in one or more institutions, or in dwelling-houses.*

3rd. *Even where the above conditions are fulfilled, a hospital must not be used at one and the same time for the reception of cases of small-pox and of any other class of disease.*

Useful information on the administration of isolation hospitals, derived from experience of them in various parts of England and Wales, will be found in a report [C.—3290] of the Medical Department, 1882—re-issued in 1894.

W. H. POWER,

Local Government Board,
Medical Department,
August, 1900.

Medical Officer.

Epidemic Regulations: Notification of Cases of Plague.GENERAL.

To all Sanitary Authorities in ENGLAND AND

WALES as herein defined ; —

To all Medical Officers of Health of the

SANITARY AUTHORITIES aforesaid ; —

And to all others whom it may concern.

WHEREAS England and Wales appear to be threatened with Plague and it is desirable that regulations should be made as herein-after contained :

NOW THEREFORE, We, the Local Government Board, in the exercise of the powers given to Us by the Public Health Acts, and any other Acts enabling Us in this behalf, do, by this Our Order, make the following Regulations, and Declare the same to be in force in the District of every Sanitary Authority in England and Wales, and to apply to all vessels within

the jurisdiction of a Port Sanitary Authority or a Riparian Authority :

I.—In this Order—

The expression “Sanitary Authority” means every Port Sanitary Authority and every Council of a County Borough and every Urban or Rural District Council, and in the Administrative County of London every Sanitary Authority for the execution of the Public Health (London) Act, 1891.

The expression “Medical Officer of Health” includes any duly qualified Medical Practitioner appointed or employed by a Sanitary Authority to act in the execution of any regulations made by Us in pursuance of any of the enactments referred to in this Order.

II.—In the District of every Sanitary Authority which is situate without the Administrative County of London the persons mentioned in Section 3 of the Infectious Disease (Notification) Act, 1889, and the Sanitary Authority shall, under this Order, have the same powers and duties in relation to the notification of cases of Plague as they would have under that Act if Plague were an infectious disease to which that Act applied.

In the District of every Sanitary Authority in the Administrative County of London, and in the District of the Port Sanitary Authority of the Port of London, the persons mentioned in Section 55 of the Public Health (London) Act, 1891 (including the Managers of the Metropolitan Asylum District), and the Sanitary Authority shall, under this Order, have the same powers and duties in relation to the notification of cases of Plague as they would have under that Section if Plague were an infectious disease to which that Section applied.

The Sanitary Authority shall forthwith cause Circular Letters to be sent to all legally qualified Medical Practitioners in the District informing them of their duties under this Regulation.

III.—It shall be the duty of every Medical Officer of Health to report forthwith to Us any case of Plague which

may be notified to him, or which may otherwise come or be brought to his knowledge and which may occur in the District or area assigned to his charge.

Given under the Seal of Office of the Local Government Board, this Nineteenth day of September, in the year One thousand nine hundred.

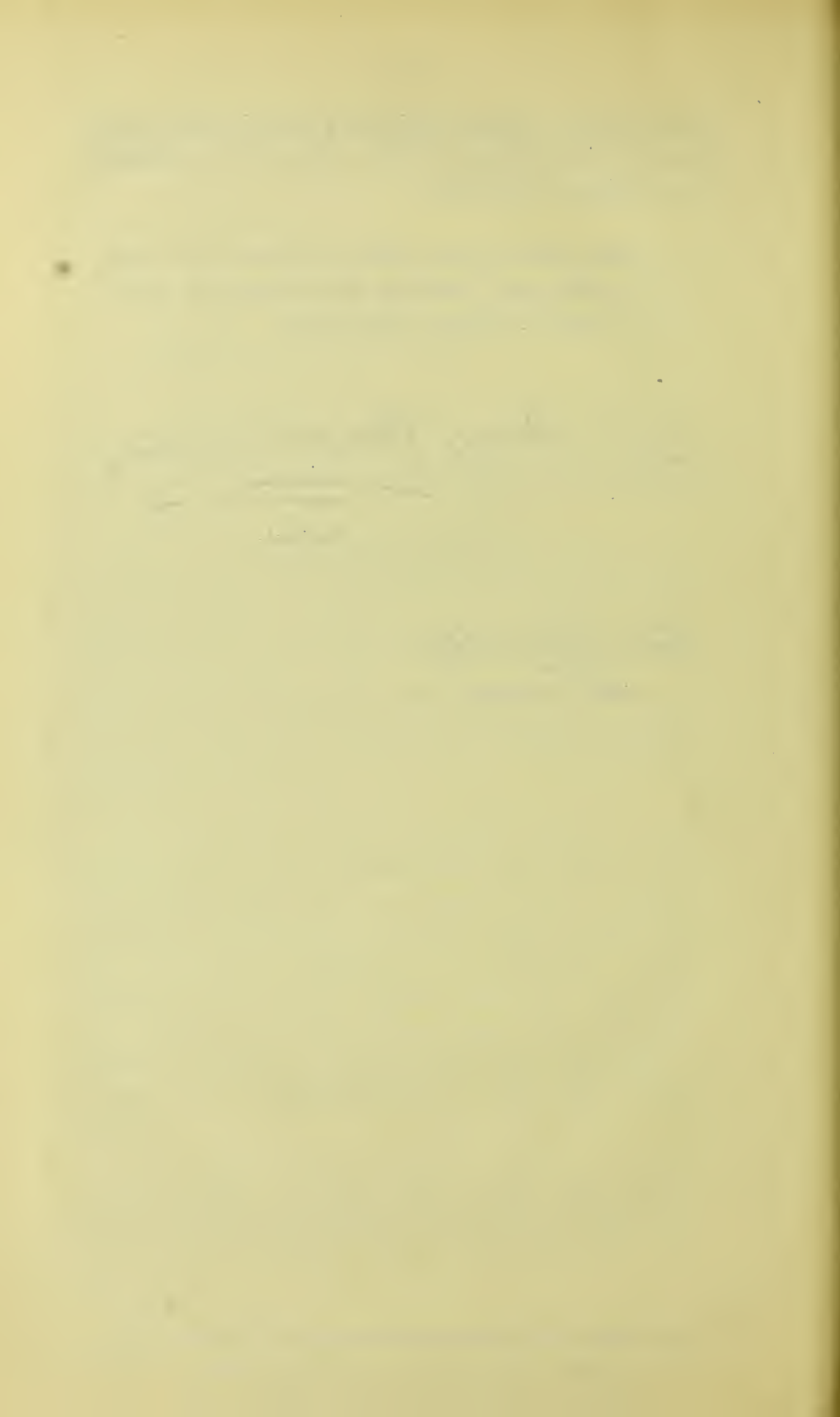


Henry Chaplin

President.

Will. E. Knollys

Assistant Secretary.



Circular.

Sanitary Authorities.

England and Wales (including London).

13

NOTIFICATION OF CASES OF PLAGUE.

Local Government Board,
Whitehall, S.W.,
20th September, 1900.

SIR,

I AM directed by the Local Government Board to state that in consequence of the appearance of Plague at Glasgow, and in view of the possible occurrence of cases of the disease in England and Wales, they have decided to issue an Order requiring the immediate notification to the Sanitary Authorities and to themselves of all cases of Plague.

The Order, in its application to sanitary districts outside London, extends the provisions of the Infectious Disease (Notification) Act, 1889, to the notification of every case of Plague occurring in the district of a Sanitary Authority.

As regards the district of any Sanitary Authority in the Administrative County of London, and the district of the Port Sanitary Authority of London, the Order similarly extends the provisions of section 55 of the Public Health (London) Act, 1891.

The Order also requires the Sanitary Authority forthwith to send circular letters to all legally qualified medical practitioners in the district, informing them of their duties under the regulations, and it imposes upon every Medical Officer of Health the duty of reporting forthwith to the Board any case of Plague which may be notified to him, or which may otherwise come or be brought to his knowledge, and which may occur in the district or area assigned to his charge.

Attention is drawn to the definitions of "Sanitary Authority" and "Medical Officer of Health" in Article I. of the Order.

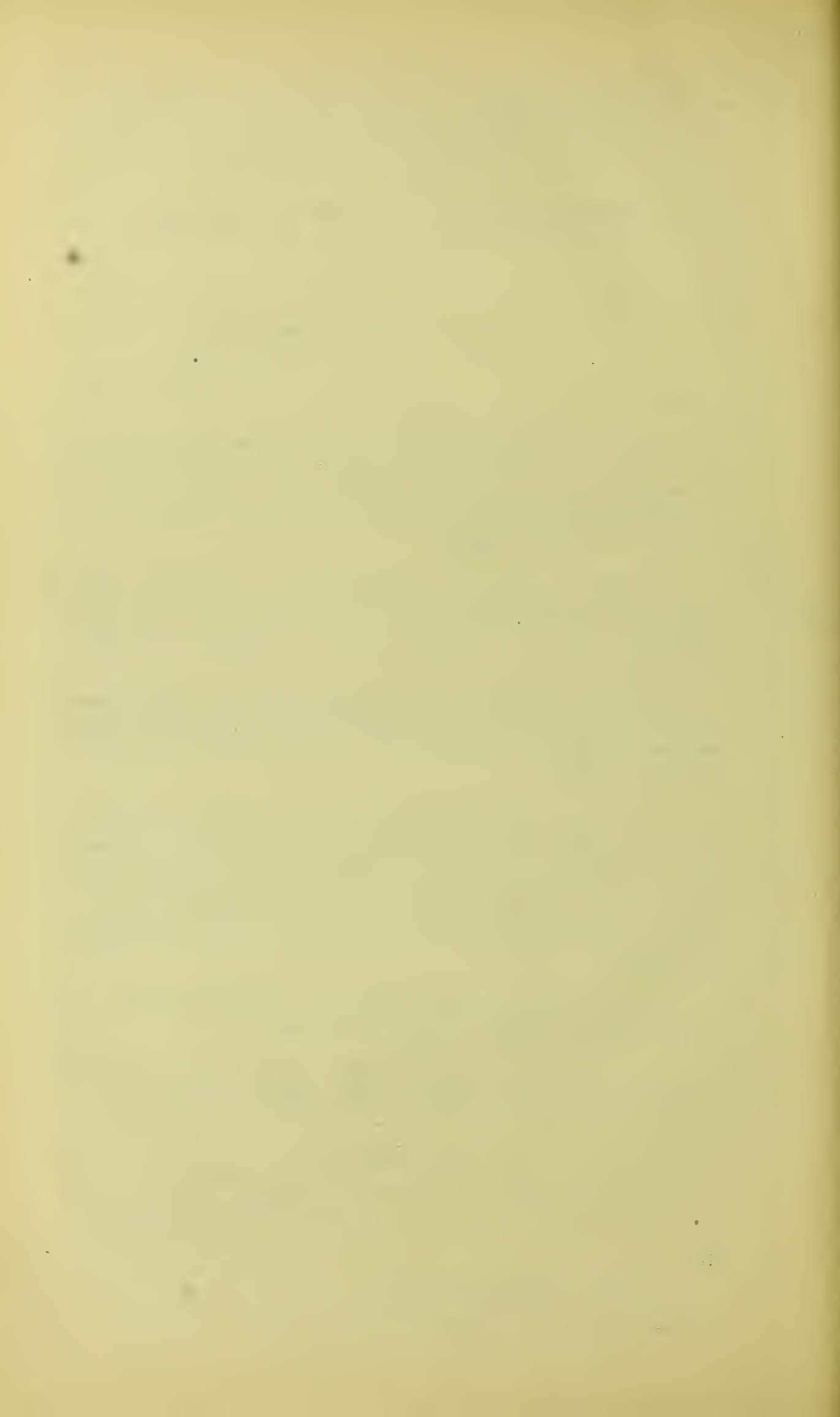
Copies of the Order are enclosed, and the Board request that you will deliver a copy to the Medical Officer of Health, as defined by the Order.

I am, Sir,
Your obedient Servant,
JOHN LITHIBY,
Assistant Secretary.

To

The Clerk to the Sanitary Authority.

Order No. 41,820.
3 copies.



14

General Memorandum on the Proceedings
which are advisable in Places attacked or threatened
by Epidemic Disease.

1. WHEREVER there is prevalence or threatening of cholera, diphtheria, fever, or any other epidemic disease, it is of more than common importance that the statutory powers conferred upon Local Authorities for the protection of the public health should be well exercised by those Authorities, acting with the advice of their Medical Officers of Health.

2. Proper precautions are equally requisite for all classes of society. But it is chiefly with regard to the poorer population, resident in the courts and alleys of towns and in the labourers' cottages of country districts, that Local Authorities are called upon to exercise vigilance, and to proffer information and advice. Common lodging-houses, and houses which are sub-let in several small holdings, always require particular attention.

3. Wherever there is accumulation, stink, or soakage of house refuse, or of other decaying animal or vegetable matter, the nuisance should as promptly as possible be abated, and precaution should be taken not to let it recur. Especially examination should be made as to the efficient working of sewers and drains, and any defect therein, and any nuisance therefrom or from any foul ditches or ponds, should be got rid of without delay. The ventilation of sewers, the ventilation and trapping of house drains, and the disconnexion of cistern overflows and sink pipes from drains should be carefully seen to. The scavenging of the district, the cleanliness of the surface of the ground and the state of receptacles for excrement and of ash-pits or dust-bins, will require close attention. In slaughter-houses, and wherever animals are kept, strict cleanliness should be enforced.

4. In the removal of filth during periods of epidemic disease, it is commonly necessary to employ chemical agents—*e.g.*, green copperas, or chlorinated lime—for reducing or removing the offence and harm which may be involved in the disturbance of the filth. In the removal of privy contents these agents are more particularly wanted if the disease in question be cholera or enteric fever. The chemical agent should be used liberally over all exposed surfaces from which filth has been removed. Unpaved earth close to dwellings, if it be sodden with slops or filth, ought to be treated in the same way.

5. Sources of water-supply should be well examined. Water from sources which can be in any way tainted by animal or vegetable refuse, especially those into which there may be any leakage from sewers, drains, cesspools, or foul ditches ought no longer to be drunk. Above

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all, where the disease is cholera, diarrhœa, or enteric fever, it is essential that no impure water be drunk.

The liability of leaky water-pipes to act as land drains and to receive foul matters as well as land drainage through their leaks is not to be overlooked. And such leaky pipes, running full of water with considerable velocity are liable to receive, by lateral insuction at their points of leakage, external matters that may be dangerous. This latter fact is not recognised so generally as it should be; and ignorance of it has probably baffled many inquiries in cases where water services have in truth been the means of spreading disease.

If unfortunately, the only water which can be got should be open to suspicion of dangerous organic impurity, it ought at least to be boiled before it is used for drinking. It should not to be drunk later than 24 hours after it has been boiled. Filtering of the ordinary kind cannot of itself be trusted to purify water. It cannot be too distinctly understood that dangerous qualities of water are not obviated by the addition of wine or spirits.

6. When there appears any probable relation between the distribution of disease and of milk supplies, the cleanliness of dairies, the purity of the water used in them, the health of the persons employed about them, and the health of the cows that furnish milk should always be carefully investigated. Even apart from any apprehension of milk being concerned in a particular outbreak of disease, it is desirable that English people should adopt the custom, which is always followed in some continental countries, of boiling all milk at once upon its reception into a house, unless, indeed, such milk has been previously sterilised.

7. The washing and lime-whiting of uncleanly premises, especially of such as are densely occupied, should be pressed with all practicable despatch.

8. Overcrowding should be prevented. Especially where disease has begun, the sick-room should, as far as possible, be free from persons who are not of use to the patient.

Ample ventilation should be enforced. It should be seen that windows are made to open, and that they are sufficiently opened. Especially where any kind of infective fever has begun, it is essential, both for patients and for persons who are about them, that the sick-room and the sick-house be constantly traversed by streams of fresh air.

9. The cleanliest domestic habits should be enjoined. Refuse matters should be speedily removed or destroyed; and things which have to be disinfected or cleansed should always be disinfected or cleansed without delay. The influence of exposure to sunlight and fresh air in the destruction of infection should be borne in mind.

10. Special precautions of cleanliness and disinfection are necessary with regard to infective matters discharged from the bodies of the sick. Among discharges which it is proper to treat as infective are those which come in cases of small-pox and scarlatina from the affected skin; in cases of cholera and enteric fever from the intestinal canal; in enteric fever also the urine; in cases of diphtheria and scarlatina from the nose and throat; likewise, in cases of any eruptive or other epidemic fever, the general exhalations of the sick. The caution which is necessary with regard to such matters must, of course, extend to whatever is imbued with them; care must be taken that bedding, clothing, towels, handkerchiefs, and other articles which have been in use by the sick may not become sources of mischief, either in the house to which they belong or in houses to which they are conveyed. So far as articles of this class can be replaced by rags or things of small value, it is best to use such things and burn them when they are soiled. Otherwise clothing and infected articles should be subjected to the disinfectant of the sick room before washing, or be removed for disinfection by steam heat.

In enteric fever and cholera the evacuations should be regarded as capable of communicating an infectious quality to any night-soil with which they are

mingled in privies, drains, or cesspools ; and after such disinfection of them as is practicable, they should be disposed of without delay and under the safest conditions that local circumstances permit. They should not be thrown into any fixed privy receptacle, and above all, they must never be cast where they can run or soak into sources of drinking water.

11. All reasonable care should be taken not to allow infective disease to spread by the unnecessary association of sick with healthy persons. This care is requisite, not only with regard to the sick house, but likewise with regard to schools and other establishments wherein members of many different households are accustomed to meet.

12. If disease begins in houses where the sick person cannot be properly accommodated and tended, medical advice should be taken as to the propriety of removing him to an infirmary or hospital. Every Local Authority should have in readiness a hospital for the reception of such cases.

Where dangerous conditions of residence cannot be promptly remedied, it will be best that the inmates, while unattacked by disease, remove to some safer lodging.

Persons who have been in association with the sick should be kept under observation for a time corresponding to the longest known period of incubation of the disease in question.

13. In the event of death taking place from an infectious disease, the body should as soon as possible be placed in a coffin with chlorinated lime or other suitable disinfectant, and should be buried (or cremated) with no longer delay than is necessary to allow the fact of death to be verified. Holding of "wakes," large funeral assemblages, and exposure of the corpse to visitors, are especially to be avoided, as is also borrowing of mourning dress for the occasion of the funeral.

14. Privation, as predisposing to disease, may require special measures of relief.

15. In certain cases special medical arrangements are necessary. For instance, as cases of cholera in this country sometimes begin somewhat gradually in the comparatively tractable form of what is called "premonitory diarrhoea," it is essential that, where cholera has appeared, arrangements should be made for affording medical relief without delay to persons attacked, even slightly, with looseness of bowels. So, again, where small-pox is the prevailing disease, it is essential that all unvaccinated persons (unless they previously have had small-pox) should very promptly be vaccinated ; and that re-vaccination should be performed in cases properly requiring it.

16. It is always to be desired that the people should, as far as possible, know what real precautions they can take against the disease which threatens them, what vigilance is needful with regard to its early symptoms, and what (if any) special arrangements have been made for giving medical assistance within the district. For the purpose of such information, printed hand-bills or placards may usefully be employed, and in cases where danger is great, house-to-house visitation by discreet and competent persons may be of the utmost service, both in quieting unreasonable alarm and in leading or assisting the less educated and the destitute parts of the population to do what is needful for safety ; as well as in the discovery of unreported or suspicious cases of illness.

17. The present memorandum relates to occasions of emergency. Therefore the measures suggested in it are essentially of an extemporaneous kind ; and permanent provisions for securing the public health have, in express terms, been but little insisted on. It is to be remembered, however, that in proportion as a district is habitually well cared for by its Local Authority, the more formidable emergencies of epidemic disease are not likely to arise in it.

18. Provision by the Local Authority for disinfection by steam of bulky articles, and of those which cannot without injury be boiled in water or exposed to chemical agencies, ought always to be in readiness. Without such provision no complete disinfection of such articles can be effected. Partial and nominal disinfection, besides being wasteful, may be mischievous, as giving rise to a false security.

19. The following system of domestic disinfection may be commended to Local Authorities who have already provided adequate public means for the disinfection and for the disposal of infected matters and things :—

- (a.) For the purposes of the sick room such as the reception of soiled handkerchiefs, sheets, and the like, as well as for the swabbing of floors, a valuable disinfecting solution may be made with perchloride of mercury. It is well to have this solution slightly acid, coloured also in such a way that it shall not readily be confused with drinks or medicines ; and proper caution should be given to avoid accidents in its use. Local Authorities will find it advantageous to have such a solution* prepared and issued under the direct instructions of the Medical Officer of Health, and supplied of a uniform strength at the infected house upon the order of that officer. After being steeped in such solution and rinsed linen and other washable articles should be washed in boiling water.
- (b.) In places provided with proper systems of excrement disposal, excrements of cholera and enteric fever, after being treated in detail with the same disinfecting solution in ample quantity, may be safely put into the ordinary closet ; but special care as to the flushing of drains and sewers, and special frequency in the removal and exchange of excrement receptacles, will commonly be wanted. Where the only closet is one that communicates with a cesspool or privy pit, the best arrangement for the disposal of infected stools that under these improper local circumstances may be found practicable will have to be adopted, *e.g.*, special pails, furnished with tight-fitting lids and painted a distinguishing colour, may be furnished and collected daily by the Local Authority ; their contents being then mingled with sawdust and burnt in a furnace.
- (c.) The interiors of infected rooms should be disinfected by skilled persons acting under the directions of the Medical Officer of Health. The room should be prepared by the removal of such articles as are best disinfected by heat, and of bright metallic objects which would be tarnished ; and, where gaseous disinfection is to be employed, by the closing up of all openings and crevices. The gas most frequently employed in the past for the purpose of room-disinfection has been sulphurous acid gas, obtained by burning sulphur, or liberated from cylinders in which it had been compressed for the purpose ; but recent experiments tend to show that the

* Solutions fitted for the desired purposes are :—

- (1) $\frac{1}{2}$ oz. corrosive sublimate, 1 fluid oz. hydrochloric acid, and five grains of commercial aniline blue, in three gallons (a bucketful) of common water. It ought not to cost more than 3*d.* the bucketful, and should not be further diluted. The use of non-metallic vessels (wooden or earthenware house tubs or buckets) should be enjoined on those who receive it, and articles that have been soaked in it should be set to soak in common water for some hours before they go to the wash.
- (2) Chlorinated lime (bleaching powder) in water, of the strength of one part in 100 = 1 lb. to 10 gallons of water.
- (3) Formalin—a solution of formic aldehyde gas in water. This may be used diluted in the proportion of 1 part of formalin to 50 parts of water. It is more expensive than the two preceding solutions, but has the advantage of being less corrosive, and less likely to injure articles with which it comes in contact.

disinfecting power of this agent has been overrated, and that chlorine gas, which may be obtained by pouring sulphuric or hydrochloric acid upon chlorinated lime, and formic aldehyde gas evolved by means of a special lamp, are more efficacious disinfectants. But, inasmuch as the infection which has to be destroyed is not that in the air of the room, but that clinging as dust and dirt to the surface and recesses of walls, floor, ceiling, and furniture, the use of these gaseous disinfectants may, with advantage, be replaced by the spraying upon the surfaces to be disinfected of a liquid disinfectant such as one or other of the solutions mentioned in the note to paragraph (a.)

- (d.) After measures of disinfecting a room have been taken, the wall paper (especially if soiled, torn or loose) should be stripped from the walls and be burned, and the room should have its ceilings and walls thoroughly washed or lime whited. The floor and woodwork should also be well washed with soap and water.
-

20. For detailed information on disinfection by heat, on hospital accommodation, on small-pox, and on questions of school administration during the prevalence of infectious disease, *see* the Office Memoranda and Reports on these subjects.

W. H. POWER,

Medical Officer.

Local Government Board,
Medical Department,
September, 1900.



15

DIRECTIONS FOR THE USE OF THE HAFFKINE PLAGUE PROPHYLACTIC.

This prophylactic material is harmless, and can be left about without danger. But, once opened, the contents of a flask are easily contaminated, and prolonged exposure of the flask to daylight is to be avoided. When kept in sealed-up flasks in a dark and sufficiently cool place, the material is likely to retain its power indefinitely.

2. The prophylactic is to be given by hypodermic injection. For this purpose an ordinary Pravaz syringe (with the piston in leather) may be employed. Before use this syringe should be disinfected by keeping it filled with a 5 per cent. solution of carbolic acid for at least one hour, and washed out afterwards with water, previously boiled for 10 minutes and cooled down again. Alternatively, a Pasteur syringe (such as is used for antitoxic serum, having a piston in india-rubber) may be employed. It should first be disinfected by boiling for 10 minutes in water. In either case the needle of the syringe should be kept sterile by wrapping it up in a wet cotton pad soaked with carbolic solution.

3. Each flask before being opened is to be shaken, so that its contents may become well mixed.

4. For an adult male in average health, about 5 to 6 cubic centimetres (15 minims counting for 1 cubic centimetre) is the dose. This should be preferably injected under the skin of the left arm. For a woman the dose is 4 to 5 cubic centimetres, that is, it is slightly less than for a man; and for a child the amount varies according to age, the rule being to give one twenty-fifth of an adult dose for each year of the child's age. Infants may be inoculated without harm. The dose will vary according to the estimated standard strength of the particular sample in the flask (the strength of each sample and adult dose is marked upon the flask).

5. Before proceeding to inoculate, the surface of the arm should be cleansed by means of a pad of lint or cotton wool soaked in a 5 per cent. solution of carbolic acid, or in other suitable disinfectant solution. The patient should be made to sit down before the inoculation is made. No special dressing is necessary over the puncture, but it may be covered with a pad of sterilized cotton wool or boric lint. The arm should be kept at rest. No changes in diet or occupation are necessary.

6. The inoculation should induce "reaction" as follows:—Some smarting is felt immediately after the inoculation, and in a few hours there is redness at the seat of the injection, with more or less swelling and some tenderness. There is also some pain on movement. In from 10 to 15 hours this decreases, though it does not altogether disappear for 5 or more days. The "reaction" is further shown by a rise of temperature which, in the majority of instances, does not exceed 102° F., and lasts for about 24 hours. Nervous individuals

sometimes show a tendency to faint. Caution must be exercised in persons suffering from heart affections, and in those who have chronic diarrhoea or the like. For such persons the dose should be reduced by one half, and repeated on two occasions, at intervals of 3 to 5 days. With these reservations, it may be said that anyone can be safely inoculated. The protection is regarded as established as soon as the general symptoms of reaction have developed. Failure to produce in a series of cases inoculated with a given sample of the material, reaction marked by the rise of temperature referred to, point to the prophylactic having deteriorated. In such case the operation should be repeated with a larger dose of the same material, or, better still, with a fresh sample from another flask.

7. It is requested that a detailed account of all operations done with this prophylactic, and of all collected observations, be communicated to the Medical Officer, Local Government Board, Whitehall, London, S.W.

W. H. POWER,
Medical Officer.

Local Government Board,
Medical Department,
September, 1900.

16

DIRECTIONS FOR OBTAINING AND FORWARDING FOR BACTERIO- SCOPIC EXAMINATION MATERIAL FROM SUSPECTED PLAGUE CASES.

[The Local Government Board, with a view to assisting in the identification of plague newly developing in one and another district, have arranged for bacteriological testing, without cost to the local authority, of material from the earliest suspected case or cases in the district. This material can be received only from the Medical Officer of Health.]

A.—From the Living Person.

1. Clean with soap and water and then with alcohol the last phalanx of either the second or third finger. When dry, or after mopping with a clean cloth, put a piece of tape round the proximal end of the last phalanx so as to cause venous congestion. Prick the palmar surface of this phalanx with a sterile needle, and immediately take up the exuding blood in two sterile capillary tubes such as are used for collecting vaccine lymph. These tubes when charged should be sealed at both ends.

2. When there is a discharging bubo, collect fluid therefrom in capillary tubes as in the case of blood. When this discharge is not of a sufficiently fluid character for collection in this way, place some of it in a small glass-stoppered phial, previously well washed out with alcohol, care being taken that no alcohol remains in the phial.

3. If expectoration be obtainable, collect some in a phial in the manner prescribed in section 2.

B.—From the Dead Body

1. Cut out any inflamed lymph gland, together with some of its surrounding tissue, and place the whole in a wide-mouthed glass-stoppered bottle, previously well washed out with alcohol, care being taken that no alcohol remains in the bottle. The bottle should have the stopper well secured and sealed.

2. Obtain also a piece of the spleen, dealing with it in the same manner.

All suspected plague material should be carefully packed so as to avoid risk of breakage.

It is to be addressed to "The Medical Officer, Local Government Board, Whitehall, London."

Full particulars as to source should in each instance accompany the material forwarded.

Local Government Board,

Medical Department,

September 1900.

W. H. POWER,
Medical Officer.



PLAGUE MEMORANDUM.

17

(1.) ADMINISTRATIVE CONSIDERATIONS.

Plague having for the space of nearly two centuries receded from Europe, has in recent years once more trended westward, and has now again appeared in Great Britain. Sanitary Authorities of England and Wales will therefore need to be on the alert to detect the presence of this disease in their districts, with a view to prevent its becoming epidemic among their populations.

It is to be anticipated, from the behaviour thus far of the recent western extension of the disease, that plague will not readily fasten on that section of our population which is properly housed, cleanly, and generally, in a sanitary sense, well to do; that rather it will especially affect, if it obtains foothold in one and another district, insanitary areas such as are peopled by the poorest class, and where overcrowding of persons in houses and dirt and squalor of dwellings and of inhabitants tend to prevail.

In these circumstances the following facts respecting plague deserve to be borne in mind :—

- (1.) Plague has an incubation period of 3 to 5 (in exceptional cases of perhaps 8 to 10) days.
- (2.) Plague is wont, especially in its earlier manifestations, to assume a mild form, or even to present anomalous symptoms, tending to confound it with other and more innocent diseases.
- (3.) Plague in all its forms must needs be regarded as personally infective.
- (4.) Plague affects rats as well as the human subject; it may, indeed, be found causing mortality among these lower animals antecedent to its definite invasion of the population. There can be no doubt that the rat and man are, as regards plague, reciprocally infective.

Although local authorities should be on their guard against plague, it is not intended to suggest that there exists any cause for alarm. There can be no doubt that, in this country, hygienic conditions and methods of dealing with infectious diseases are far in advance of those of former centuries wherein plague was repeatedly epidemic in our populations; they are in advance too, as we believe, of those in localities abroad where plague has shown itself formidable in recent years. And in so far as, in our districts, these conditions and methods are now satisfactory and sufficient, there is the less likelihood of spread of infection from plague cases casually imported. During the past 50 years there has occurred in England and Wales a large diminution in the mortality from most diseases of the infectious class, and in the same period typhus fever has declined almost to extinction. This latter disease is that which, as regards the conditions under which it becomes prevalent, most closely resembles plague. Wherefore it may be confidently anticipated that the measures of sanitary improvement, of isolation and of disinfection, which have been found effectual against indigenous disease such as typhus will, if promptly and thoroughly brought to bear, be equally effectual against plague.

First among measures requisite for control of plague is prompt information to the local authority of all cases of the disease occurring in their district. The Board, therefore, have issued an Order requiring, under penalty, immediate notification to the Medical Officer of Health of the district, and by him to the Board, of every recognized case of plague. Meanwhile, and in order to help toward recognition of this disease in its obscurer manifestations, a statement of the clinical features exhibited by this malady will be found in Part (2) of this Memorandum. Further, and with a view to assisting in the identification of plague newly developing in one and another district, the Board have arranged for bacteriological testing, without cost to the local authority, of material submitted to their Medical Officer by the Medical Officer of Health from the earliest suspected case or cases.†

In the event of plague being detected in any district, the measures to be taken to prevent its spread are, generally speaking, those which are available against the more ordinary epidemic diseases of this country, as set forth in the accompanying "General Memorandum." These measures include prompt removal of the sick persons to hospital and their isolation therein; the destruction or thorough disinfection of all infected articles, with the effectual disinfection also of the invaded dwelling place; the keeping under observation during 10 days after detection of each plague case all persons who have been in contact with the patient, and house to house visitation for the discovery of unreported or suspicious cases; the abatement as speedily as possible of all insanitary conditions in the locality which may tend to the spread of the disease; and, in the case of death, the prompt disposal of the corpse, with all due precautions against its becoming a source of infection.

An essential measure of precaution in view of the observed relation between plague in rats and plague in the human subject, will be the prompt destruction of all rats in districts threatened or invaded by plague, care being taken that their carcasses are collected and burnt without being unduly handled.

It is to be noted that when treated in a well appointed hospital, with plentiful fresh air and proper attention to cleanliness and disinfection, plague, except in its pneumonic and septicæmic forms, shows but small infective power; and that therefore doctors and nurses in attendance on the sick run but little risk of contracting the disease. Nevertheless, these and other persons brought into close relation with plague, may be afforded protection against infection by submitting themselves to protective inoculation of the sort practised with advantage to the inhabitants of invaded areas by Professor Haffkine, under the auspices of the Indian Government, in Bombay. As yet the protective material in question is not generally purchaseable in this country. For the present, therefore, and until further notice, the Board, having provided themselves with a supply of Professor Haffkine's plague prophylactic, will be prepared to issue this material in limited amount to the Medical Officers of Health of districts actually invaded by plague, for the protection therein of doctors, nurses, and other persons that are, under the conditions of the invaded area, being subjected to sustained exposure to plague infection.

† Directions for collecting and forwarding suspected material are issued by the Local Government Board to Medical Officers of Health.

(2.) SYMPTOMS OF PLAGUE.

An ordinary attack of Plague usually begins some three to five days after exposure to infection. Such attack may develop gradually, but, as commonly met with, there is sudden onset with much fever, as indicated by a high temperature, rapid pulse, headache, hot skin, and thirst. The eyes are injected as if inflamed; the expression, at first anxious and frightened, becomes subsequently vacant and dull; the utterance is thick, and the gait unsteady as in one under the influence of drink. There is at times a distinct tendency to faint. The tongue is at first covered with a moist white fur except at the edges, which are red, but later on it becomes dry and of a mahogany colour.

The most distinctive sign of plague is the presence of swellings, or "buboes" as they are called, in the groin, armpit, or neck. These "buboes," which led to the disease being called "bubonic plague" and which have no relation to venereal complaints, appear as a rule about the second or third day of the disease. They are usually painful and tender on pressure, and in size they vary from that of an almond to that of an orange. Later on they may "gather" and burst like an ordinary abscess. There may, too, appear about the body purple spots, and what are known as "carbuncles."

But buboes are not an essential feature of plague. Cases occur in which these manifestations of the disease are greatly delayed or even absent, as for instance in "Pneumonic," "Gastric," and "Septicæmic" plague; forms of the malady which may be mistaken for respectively inflammation of the lungs, typhoid fever, and acute blood poisoning. Plague in these forms is always grave; not only because of the fatality of the cases but for the reason that they, especially the "pneumonic," are highly infectious to other persons. It is important, therefore, that in localities where plague is present or is threatened, cases of anomalous illness of the above sorts be without loss of time brought under medical supervision.

Besides the forms of plague already referred to there is yet another, namely the so-called "ambulant" form. In plague of this description the affected person is hardly ill at all, presenting no definite symptoms perhaps beyond indolent, though painful, swellings in groin or armpit. Such plague cases may nevertheless be instrumental in spreading the disease, and any persons therefore who, having been possibly exposed to plague, exhibit these symptoms, should be isolated and watched medically until the nature of their malady has been definitely ascertained.

W. H. POWER,
Medical Officer.

Local Government Board,
Medical Department,
September 1900.



Circular.

Sanitary Authorities.

England and Wales (including London).

18

MEMORANDA WITH RESPECT TO PLAGUE.

Local Government Board,

Whitehall, S.W.,

9th October, 1900.

SIR,

I AM directed by the Local Government Board to state that, in view of the possibility of cases of plague occurring in England and Wales, they have thought it advisable to issue to the several Sanitary Authorities throughout the country copies of Memoranda which have been prepared by their Medical Officer containing suggestions which may be of assistance to Sanitary Authorities and their officers in guarding against the plague or dealing with any cases which may occur. Copies of these documents are enclosed.

The Board have thought it desirable that the Sanitary Authority should be put in possession of these Memoranda so that the Authority and their officers may be fully prepared to take any steps which may be necessary, and they especially desire that attention may be given to the arrangements under which Medical Officers of Health may send to this Office for bacteriological examination material from suspected cases. At the same time the Board wish it to be clearly understood that the action which they have taken should not be interpreted as suggesting that in their opinion there is cause for alarm at the present time.

I am, Sir,

Your obedient Servant,

L. B. Provis.

Secretary.

The Clerk to the Sanitary Authority.



(19)

The Medical Officer of the
Local Government Board.

Sir,

I see from the Report on Dr Calmette's second Harben Lecture (The Times, Thursday, November 15th, and the British Medical Journal, Saturday, November 17th) that Dr Calmette claims for the 'Plague Serum' (Yersin's serum obtained from Horse after many previous injections with Plague culture) that this serum injected to the amount of 20 C.C. into the vein of a person affected with bubonic plague has the power (after one or several injections) to arrest and to cure the disease. That is to say Dr Calmette (as also Yersin and the Paris School) assumes for the Plague Serum the same therapeutic action antitoxic action - which has been for some years known in the case of the diphtheria serum and also the tetanus serum and other sera. All these sera are blood sera of the horse, after the animal had been many times injected with increasing doses of the diphtheria - or tetanus toxins respectively.

But unlike what has been experimentally established in the case of the diphtheria serum and the tetanus serum, viz: that these sera owe their therapeutic action principally to their containing antitoxic substances, that is to say substances capable of neutrali -



sing the action of the toxins circulating within the infected individual (and created herein by the specific microbes), Dr Calmette ascribes the assumed therapeutic action of the Plague serum not to the antitoxic properties but to its possessing germicial action. It must have become known to Calmette and others that the former method of Yersin, consisting in the injection of 5-10 C.C of the Plague serum into the subcutaneous tissues of a plague patient, for which method previously some very remarkable results had been claimed - not, however, confirmed by the Indian experiments - did not prove effective in Europe, and therefore some other method and some other explanation of its action - for that this plague serum must, by analogy, be effective was a fixed assumption - had to be found. This led them, therefore, to the intravenous injection and to the assumption that the Plague serum acts directly on the bacilli themselves, i.e. it does not principally act as an antitoxin, but germicially.

But to uphold this explanation the further assumption had to be made that the plague bacilli are numerous present in the circulating blood. Now, this assumption is entirely arbitrary and there is an almost overwhelming testimony to the effect that in the bubonic form of plague, i.e. the more common form of the disease, the plague bacilli are either conspicuous by their absence from the blood, or, if present in it, in

only relatively small numbers. This being the case the intravenous injection of the plague serum could not affect the plague bacilli directly to any marked degree. It is agreed by most observers, that the principal seat of the multiplication of the plague bacilli in the bubonic form of the disease are the lymphatic glands and not the blood; and one may further conclude from this fact, that it is in these lymph glands that the multiplying bacilli produce their toxin which is washed (absorbed) into the blood and this in its turn causes the fever and other constitutional disturbances, such is the case in diphtheria, typhoid fever, and other infectious diseases, in which the specific microbe settles and multiplies within one or the other organ, but not in the blood.

From a very extensive series of observations I am clear about this fact that in the bubonic form of plague in man the bacilli are only scantily present in the blood, if at all, and as regards animals infected with plague in the laboratory, the bacilli are rarely present in the blood in great numbers; in the rat for instance, I have found in the blood occasionally, though not often, that the bacilli occur fairly abundant, in the majority of instances the bacilli were so few in the blood that a large drop of blood yielded only two or three colonies, while in some instances no bacilli could be demonstrated by culture even from a large drop of

heart's blood. I am speaking of animals that died within 48 hours; animals that die after 3 days rarely show any bacilli in the blood. As regards the guineapig, dead within 48-72 hours bacilli are found in the blood, but here also as a rule relatively few colonies are obtained from the blood, and only in few instances do they occur abundantly in the blood.

Very truly yours,

(Signed) E. Klein.

November 17th, 1900.



Saint Bartholomew's Hospital
and College,

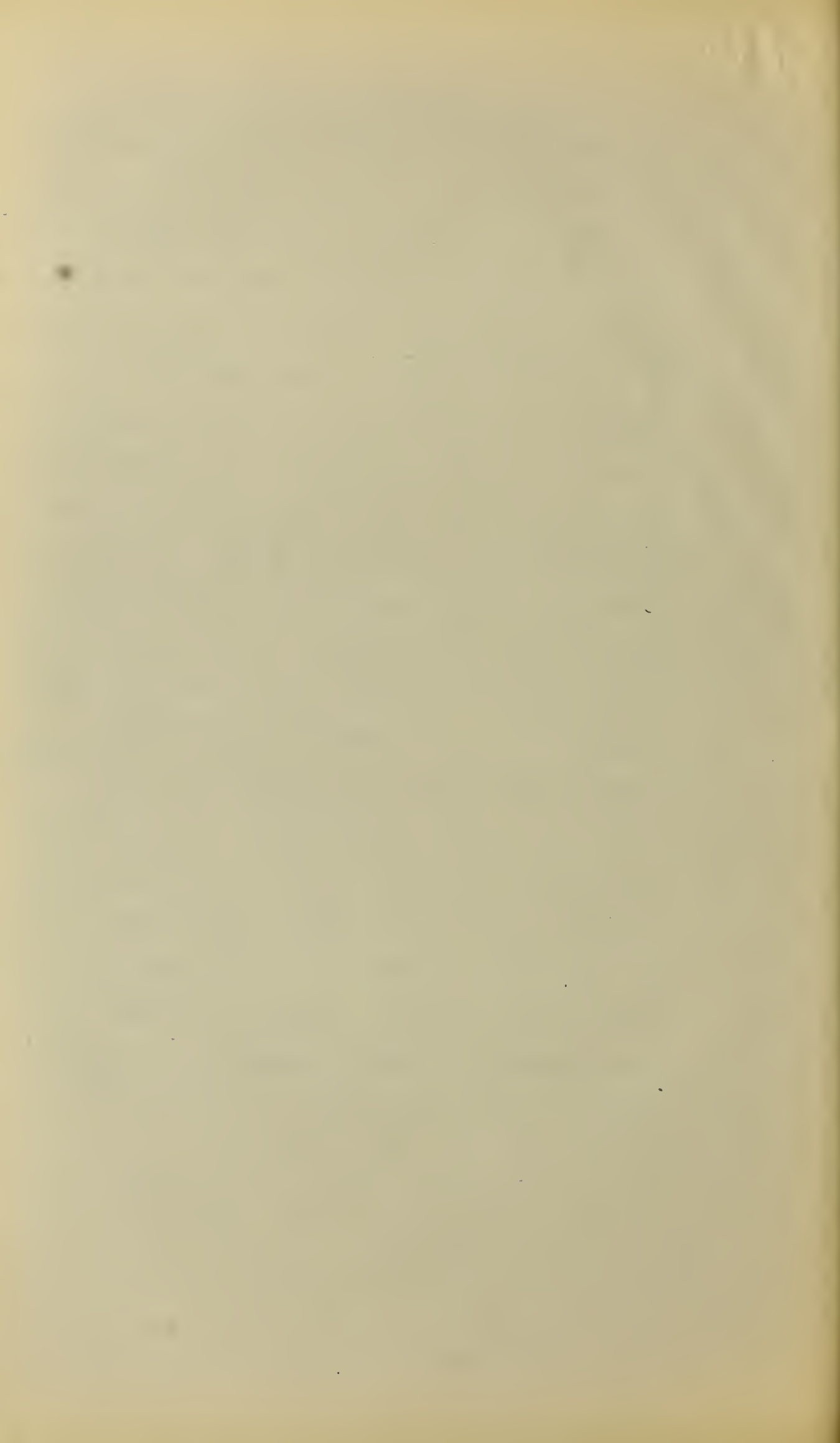
November 22nd, 1900.

The Medical Officer of the
Local Government Board.

Sir,

I see in to-day's Times an account of Dr Calmette's third lecture. In it he ascribes to Haffkine's Plague prophylactic a rather dangerous character supposed to be due to the presence of Toxin, Haffkine's prophylactic being a broth culture, containing both the bacillary bodies as also the toxins.

Now, as far as I am aware the above statement of Dr Calmette could not be based on observations made on the human subject, because we have the repeated and explicit statements of the authorities in India - the only place where the Haffkine prophylactic has been used on an extensive scale,- viz : that the injected persons suffered no such dangerous consequences. I presume, therefore, that if fact be at the base of Calmette's statement, it could have only been derived from experiments on animals. Now, it will be in your recollection that Haffkine and myself made for the Board a large number of experiments with Haffkine prophylactic on rats, guinea-



pigs and rabbits. A report thereof had been presented to your predecessor in office, and therein you will find that even large doses of the prophylactic 10 C.C. 20 C.C., 30 C.C., 40 C.C., and even 60 C.C., per animal produced no ill-effect whatsoever. I may add here that the experiments which I have made since both with Haffkine's prophylactic sent from India as also with similar fluid made here do not in the slightest degree, bear out Calmette's contention. No animal injected with it has shown the slightest ill-effect. It is, however, possible to explain Calmette's statements by his using not "Haffkine's prophylactic" (broth culture one month old sterilised for one hour at 70°C), but some material similar to it, for he states that his 'Haffkine prophylactic' was sterilised for one hour at $65-70^{\circ}\text{C}$. I know as a fact from experiments on rats, that if the broth cultures are sterilised at 68°C or less there remains in them some poisonous substance capable of fatal effect on animals. Whether Calmette's new prophylactic viz: dried and sterilised growth of plague bacilli taken from solid medium deserves the glowing description and preferential use over Haffkine's remains to be seen.

Very truly yours,

(Signed) E. Klein.



BURIAL ACT, 1900.

21

WHITEHALL,

17th December, 1900.

SIR,

I AM directed by Mr. Secretary Ritchie to call your attention to the important changes in the law affecting Burial Authorities which will come into effect on the 1st January, 1901, under the provisions of the Burial Act of 1900, of which a copy is enclosed herewith.

BURIAL AUTHORITIES.

The "Burial Authorities" referred to in the Act are "any Burial Board, "any Council, Committee, or other Local Authority having the powers and "duties of a Burial Board, and any Local Authority maintaining a cemetery "under the Public Health (Interments) Act, 1879, or under any local Act." (Section 11.)

Two main features of the Act are :—

The redistribution between the Secretary of State and the Local Government Board of the powers and duties of a Central Authority under the laws affecting burial. (Section 4 and Schedule 1.)

The alteration of the law regulating consecration, chapels and fees payable to ministers, clerks, and sextons. (Sections 1—3.)

I.—TRANSFER OF POWERS.

Section 4 and Schedule I. of the Act transfer to the Local Government Board the powers, duties, and functions of the Secretary of State under the enactments set out in that Schedule.

Accordingly, from the 1st January, 1901, all correspondence on matters connected with these powers should be addressed to the Secretary to the Local Government Board, and not as heretofore to this Department.

Juris-
diction of
the Local
Govern-
ment
Board.

These matters may be summarized as follows :—

- (a.) The closing of burial grounds and the prohibition of the opening of new ones.
- (b.) The approval of new burial grounds, and of additions to existing grounds.
- (c.) The adoption of the Burial Acts and the constitution, powers, and areas of burial authorities.
- (d.) The inspection and regulation of burial grounds.
- (e.) Certain provisions as to the borrowing powers and expenses of burial authorities.
- (f.) Fees other than Ecclesiastical Fees to be taken by burial authorities.
- (g.) The purchase, sale, and letting of land.
- (h.) The sanitary regulation of vaults and places of burial.
- (i.) The grant of licences for interment in closed burial grounds.

Juris-
diction of
the Secre-
tary of
State.

The Secretary of State will be the central authority regarding the consecration of burial grounds, the allotment of parts thereof for the use of particular denominations, the building of chapels, and the removal of human remains; and new functions are entrusted to him with respect to the fixing, varying, or commutation of, or compensation for, fees payable to ministers of religion, Ecclesiastical officers, and sextons.

It will be observed that, speaking generally, all questions relating to sanitation, and to the constitution, powers, and finances* of burial authorities, will in future be dealt with by the Local Government Board, whilst matters affecting the interests of the Church and other religious denominations and their officers are referred to the Secretary of State, whether such matters arise in connection with burial grounds under the Burial Acts or with cemeteries under the Public Health (Interments) Act.

II.—CONSECRATION.

Conse-
cra-
tion.

The law which will in future regulate the consecration of burial grounds is set out succinctly in the first section of the Act; it applies to all burial grounds provided by a "burial authority" as defined in Section 11, whether such grounds are already open or are to be opened hereafter.

III.—ALLOTMENTS.

Allot-
ments.

The law enabling Burial Boards with the approval of the Secretary of State to allot portions of the unconsecrated part of their burial ground for the exclusive use of particular denominations is now extended (*see* Section 9) to the case of burial grounds provided by burial authorities under the Public Health (Interments) Act, 1879.

IV.—CHAPELS.

Chapels.

The law relating to cemetery chapels is entirely altered by Section 2 of the Act, so far as relates to chapels to be erected hereafter.

All burial authorities will have power to erect on any part of their ground which is not consecrated or allotted as above a chapel for the performance of burial services; but such a chapel must be unconsecrated, and for the use of all denominations in common.

And if any part of the ground is consecrated or allotted to any particular denomination they may be called upon by the Secretary of State to cause or allow a chapel or chapels for funeral services according to the rites of such denominations to be erected, furnished, and maintained on the site or sites so appropriated.

Such chapels will be erected, furnished, and maintained at the cost of persons belonging to the particular denominations and residing within the district of the Burial Authority.

The obligation hitherto attaching to a Burial Authority, who have provided a cemetery under the Public Health (Interments) Act, to build a chapel at their own cost in the consecrated part, if any, will cease.

* No alteration is made in the existing law under which the authority of the Treasury is required for borrowing by certain Burial authorities.

V.—FEES.

A. Fees receivable by the Burial authority for their own use.

Fees of
Burial
Authority.

As already explained the functions hitherto exercised by the Secretary of State with regard to these fees are transferred to the Local Government Board : in other respects the law is unaltered.

B. Fees receivable by ministers and others or by Burial authorities on their behalf.

Ecclesi-
astical
Fees.

With regard to these the law is changed in important respects.

Fees for Services Rendered.

On and after the 1st January next the incumbent and the sexton will no longer be entitled to the fees in respect of their services at funerals which they have hitherto enjoyed by custom and under the provisions of Section 32 of the Burial Act, 1852. The burial authority must collect and pay over to them such fees as the Secretary of State shall have approved in respect of their services. And fees on a like scale and with the like approval must be collected by the burial authority and paid to any minister of religion conducting a funeral in the unconsecrated part of the burial ground or in the consecrated side in case of interments under the Burial Act, 1880. (Section 3 (1), (2), (3).)

Ministers.
Sextons.

Fees to clerks and other ecclesiastical officers (except the sexton's fees for services rendered) are abolished, subject to compensation for vested interests. (Section 3 (5).)

Clerks.

Fees other than for Services Rendered.

Such fees as those in respect of monuments or any other matter arising in a burial ground maintained by a Burial authority which have hitherto been customary in many places will no longer be payable whether to incumbents, churchwardens, trustees, or other persons ; subject to the following provisions.

Where such fees were payable on the 10th of July, 1900, in respect of monuments or any other matter arising in a parochial burial ground laid out and used before that date, the like fees will continue to be paid during the incumbency of the then incumbent or for 15 years from that date, whichever is the longer period, and in the case of fees payable to churchwardens, trustees, or others not claiming through or under the incumbent, they will continue to be payable for 15 years. (Section 3 (4), (i).)

In any case the burial authority is to collect and pay over the fees for the legal period in like manner as the fees for services rendered, unless an arrangement is made for their equitable commutation in the manner provided in Section 3 (4), (ii).

VI.—FIXED PAYMENTS IN LIEU OF FEES.

In consequence of the repeal of Section 37 of the Burial Act of 1852 it will not in future be possible to substitute a fixed payment for the fees payable to incumbents, clerks, and sextons in the manner therein provided ; but, where such fixed payments have been arranged, the provisions of Section 3 of the new Act—save those relating to collection—apply to them equally as to fees. (Section 3 (7).)

VII.—CEMETERIES UNDER THE PUBLIC HEALTH (INTERMENTS) ACT.

In addition to the matters referred to already there are several further respects in which these cemeteries are placed in the same position as burial grounds provided under the Burial Acts, or are otherwise affected.

Duties of Incumbent.

(a.) Incumbents are placed under the same obligations with respect to the interment therein of their parishioners and of persons dying in their parishes as they are under with respect to their own churchyards, viz., to perform the duties connected with the burial and religious service in person or by duly qualified deputy. (Section 7.)

Chaplain.

(b.) The power to appoint a chaplain ceases. (Section 7.)

The appointment of existing chaplains is not necessarily determined by the Act ; such chaplains will have the right to continue to perform burial services in the consecrated part of the ground and will be entitled to receive the fees set out in the scale approved by the Secretary of State. The Secretary of State is advised that the obligations of the incumbent referred to in (a) will be suspended until the appointment of the chaplain is determined.

Burial Act of 1880.

(c.) The provisions of the Burial Laws Amendment Act, 1880, subject to the amendment mentioned below, will apply as if the Burial authority were a Burial Board. (Section 9.)

(d.) Where there is no chaplain, burials in the consecrated part of the ground are to be registered in the same way as burials in the unconsecrated part. (Section 7.)

Boundary Fences, s. 10.

(e.) The provisions of Section 15 of the Cemeteries Clauses Act, 1847, which were applicable to cemeteries under the Public Health (Interments) Act, and required them to be enclosed by substantial walls or iron railings, at least 8 feet high, will no longer apply to such cemeteries.

VIII.—MINOR ALTERATIONS OF THE LAW.

Notice of Burial under Act of 1880, s. 1.

1. The Burial Laws Amendment Act, 1880, requires 48 hours' notice to be given of intention to bury in accordance with its provisions. This enactment is repealed, and in future the burial authority will prescribe in what manner the notice is to be given.

Protection of unconsecrated ground, s. 6.

2. For the future, any unconsecrated ground which is maintained by a burial authority and set apart for the purposes of burial must not be applied to any other purpose except by leave of the Local Government Board.

3. Section 10 of the Burial Act, 1855, under which a burial ground provided under the Burial Acts may be conveyed and settled so as to be held and used in all respects as the churchyard is repealed.

I am, Sir,

Your obedient Servant,

KENELM E. DIGBY.

BURIAL ACT, 1900.

22

TABLES OF FEES.

Whitehall,

17th December, 1900.

SIR,

IN order that no unnecessary delay may take place in fixing the Table of Fees to be received by Burial Authorities under Section 3 (1) of the above Act, I am directed by the Secretary of State to request that you will be so good as to submit such a Table for his consideration and approval at your earliest possible convenience.

I am to add that the Secretary of State sees no reason for holding that, during the period which must elapse before his formal approval can be signified, Ministers and Sextons are precluded from receiving reasonable fees for their services at interments, or that there would be any objection to such proper fees (*e.g.* those heretofore received) being collected and paid to them by the Burial Authority.

I am, Sir,

Your obedient Servant,

KENELM E. DIGBY.

The Chairman of the Burial Authority.



Memorandum as to Annual Reports of Medical Officers of Health.

Every Medical Officer of Health, appointed under Order of the Local Government Board, is required to make an annual report with regard to each Sanitary District, or division of a District, which is under his superintendence. This report is to be for the year ending the 31st of December, or, if the Officer at that date has not been in office for a whole year, then for so much of the year as has elapsed since his appointment. The report is to be made to the Council by whom he is appointed, and the Medical Officer of Health himself should send a copy of it to the Local Government Board and to the County Council or County Councils of the County or Counties within which his district may be situated.* It should be made as soon as practicable after the expiration of the year to which it relates. The Medical Officer of Health ought not, in general, to have any difficulty in doing this within a month or six weeks; but if from any special circumstances the report cannot be completed within six weeks, it should be understood that the delay must not be indefinite, and that the report should be in the hands of his Council, and of the Board, within, at most, three months from the end of the year. The Board's copy of the report should be forwarded to them when the original is sent to the Council, except where the Report is likely to be printed by order of the Council. In such cases the Board need only be supplied with a printed copy. It is very desirable that the Annual Report should be printed, for the sake of facility of reference and in order that a supply of copies may be available for distribution among the Town or District Councillors and other persons interested.

Article 18 (Section 14) of the Board's Order of March, 1891, specifies the information to be contained in the Annual Report, and is annexed.

The report should be chiefly concerned with the conditions affecting health in the District and with the means for improving those conditions. It should contain an account, brought up to the end of the year under review, of the sanitary circumstances of the district, and of any improvement or deterioration which may have occurred during the year in these circumstances. Care should be taken to report fully and explicitly on the influences affecting or threatening to affect injuriously the public health in the district, and on the action which has been taken, or which may still be needed, with a view to combat those influences. It is of especial importance that the Medical Officer of Health should record what action has been taken to remedy unhealthy conditions

* Where the District for which a Medical Officer of Health acted at the beginning of the year has, in consequence of any order made by a County Council or Joint Committee under the Local Government Acts, 1888 and 1894, been placed under the jurisdiction of two or more Councils, the Medical Officer of Health should send to each Council, either a report on the whole area for which he has acted during the previous year, or a report relating to so much of that area as on the 31st December of that year was under the jurisdiction of each Council. If one report only be made, the Medical Officer of Health should make such distinctions as will enable each Council to ascertain the facts specially relating to its own District.

In cases where the Local Authority having jurisdiction over an area at the beginning of the year has ceased to exist, the Medical Officer of Health should report thereon to the Council or Councils exercising authority over such area at the time that he makes his annual report.

which have been reported by him in previous annual reports, or in special reports presented during the year under review, and that attention should be called afresh, year by year, to such as remain unremedied.

As subjects concerning which the Board desire to obtain, through Annual Reports of the Medical Officer of Health, not only definite general information, but record also of particular changes of condition that are occurring incidentally or by action of the local authority, the following deserve to be especially borne in mind :—

Physical features and general character of the District.

House accommodation, especially for the working class : its adequacy and fitness for habitation. Sufficiency of open space about houses and cleanliness of surroundings. Supervision over erection of new houses.

Sewerage and drainage : its sufficiency in all parts of the District. Condition of sewers and house drains. Method or methods of disposal of sewage. Localities where improvements are needed.

Excrement disposal : system in vogue ; defects, if any.

Removal and disposal of house refuse—whether by public scavenger or occupiers : frequency and method.

Water supply of the District or its several parts : its source (from public service or otherwise), nature (river water, well water, upland water, etc.), sufficiency, wholesomeness, and freedom (by special treatment or otherwise) from risks of pollution.

Places over which the Council have supervision, *e.g.*, lodging houses, slaughterhouses, bakehouses, dairies, cowsheds, and milkshops, factories and workshops, and offensive trades.

Nuisances : proceedings for their abatement—any remaining unabated.

Methods of dealing with infectious diseases : notification ; isolation hospital accommodation and its sufficiency ; disinfection.

With regard to such points it should be remembered that these reports are for the information of the Board and of the County Council as well as of the Council of the District, and that a statement of the local circumstances and history of local sanitary questions, which may seem superfluous for the latter, may often be needed by the former bodies.

The Medical Officer of Health, in reporting his proceedings and advice, should put on record whether he has made systematic inspections of his district. By “systematic inspections” are meant inspections independent of such inquiries as the Medical Officer of Health may have to make into particular outbreaks of disease, or into unwholesome conditions to which his attention has been specially called by complaints or otherwise, and such inspections will include the house-to-house inspections which may be necessary in particular localities.

In making systematic inspections, as in much of his other action, the Medical Officer of Health will usually have required the assistance of the Inspector of Nuisances ; and the Medical Officer should include in his report an account of the action which, at his instance, the Inspector may have taken for the removal of nuisances injurious to health.

The report should deal with the extent, distribution, and causes of disease, especially of epidemic and notifiable diseases, within the district ; and should give an account of any noteworthy outbreaks of such diseases during the year under review, stating the result of his investigations into their origin and propagation, and the steps taken by him, or on his advice, with a view to check their spread.

The tabular statements of sickness and mortality in the District during the year, to be made on the forms supplied for the purpose, should be the subject of comment in the text of the report, in so far as deductions from them may assist the Board and the Councils concerned to an appreciation of the lines of action needful in the future.

It will be observed that the forms for record of statistical data supplied on the present occasion differ from those supplied in former years. Four tables have, at the suggestion of the Incorporated Society of Medical Officers of Health, been substituted for the Tables A and B previously in use. This has been done with a view to facilitate record of a minimum amount of statistical information of the sort desired by the Board.

As regards these several tables a few observations appear to be needful :

In Table I. should be stated for the whole district under the superintendence of a Medical Officer of Health the number and rates of births, and of deaths under one year and at all ages, and the data on which the nett death-rate is based. Spaces are given for the insertion of the corresponding figures for the ten previous years for purposes of comparison, a comparison which will often yield points of interest. In most cases there should be no difficulty in obtaining the figures for former years from previous annual reports, but if owing to changes in the constitution of the district or for other reasons the figures cannot be ascertained for ten years, they should be given for as far back as they are available.

In Table II. the births, and the deaths corrected by the exclusion of those of non-residents and the inclusion of those of residents dying elsewhere, are to be distributed among the localities to which they belong, space being given in this table also for the insertion of the corresponding figures in previous years. As regards the classification by localities, it is to be observed that the District under the superintendence of a Medical Officer of Health may contain several parts evidently differing in their circumstances, or having very different rates of mortality, either from all causes, or from some particular disease or class of diseases. The observation of these differences can scarcely fail to lead to valuable information, especially when the returns for several years can be compared together, and it is in view of such differences that the tabular statements are required in Article 18 (Section 14) to be classified according to "*localities*," and that provision for such a classification is made in the forms supplied for returns of deaths. In the absence of any obvious differences of the above sort, it will still be desirable where the district is of any considerable size and has recognized sub-divisions to classify the deaths according to the part of the district in which they occur; and for this purpose any areas of known population (such as wards, parishes or groups of parishes, or registration sub-districts) may be taken as representing "*localities*" for the purposes of the Order.

In small districts having no sub-divisions of known population Table II. need not be filled up.

Table III. provides for the number of notified cases of infectious disease during the year, classified according to ages of patients and localities, and also the number of cases removed to hospital from each locality. As regards the classification according to locality, the same considerations apply to the records of sickness as to those of deaths.

Table IV. provides for the deaths during the year from various causes, classified according to ages and localities. In populous districts a more extended table in a similar form containing a more complete classification of causes of death may with advantage be substituted for this form.

Great care should be taken to note carefully the headings and the foot-notes before proceeding to fill the columns and the blank spaces in these tables.

What has been said above with regard to the information which an annual report should contain must be understood, not as suggesting that the report should be limited to these subjects, but as indicating the sort of information required by the Board's Order. Many Medical Officers of Health will doubtless, with great advantage to the administration of their districts, furnish much more detailed information and statistics respecting particular questions to which they have been led by the circumstances of the foregoing year to devote attention, or in the investigation of which they may have arrived at definite conclusions. Any information of this kind will be appreciated by the Local Government Board.

W. H. POWER,
Medical Officer.

Local Government Board,
December, 1900.

EXTRACT FROM THE ORDER OF THE LOCAL GOVERNMENT BOARD.

23rd March, 1891.

Duties.

Art. 18. The following shall be the duties of the Medical Officer of Health in respect of the District for which he is appointed.

- (1.) He shall inform himself as far as practicable respecting all influences affecting or threatening to affect injuriously the public health within the District.
- (2.) He shall inquire into and ascertain by such means as are at his disposal the causes, origin, and distribution of diseases within the District, and ascertain to what extent the same have depended on conditions capable of removal or mitigation.
- (3.) He shall by inspection of the District, both systematically at certain periods, and at intervals as occasion may require, keep himself informed of the conditions injurious to health existing therein.
- (4.) He shall be prepared to advise the Sanitary Authority on all matters affecting the health of the District, and on all sanitary points involved in the action of the Sanitary Authority; and in cases requiring it, he shall certify, for the guidance of the Sanitary Authority or of the Justices, as to any matter in respect of which the Certificate of a Medical Officer of Health or a Medical Practitioner is required as the basis or in aid of sanitary action.
- (5.) He shall advise the Sanitary Authority on any question relating to health involved in the framing and subsequent working of such byelaws and regulations as they may have power to make, and as to the adoption by the Sanitary Authority of the Infectious Diseases (Prevention) Act, 1890, or of any section or sections of such Act.
- (6.) On receiving information of the outbreak of any contagious, infectious, or epidemic disease of a dangerous character within the District, he shall visit without delay the spot where the outbreak has occurred, and inquire into the causes and circumstances of such outbreak, and in case he is not satisfied that all due precautions are being taken, he shall advise the persons competent to act as to the measures which may appear to him to be required to prevent the extension of the disease, and take such measures for the prevention of disease as he is legally authorised to take under any Statute in force in the District, or by any Resolution of the Sanitary Authority.
- (7.) Subject to the instructions of the Sanitary Authority, he shall direct or superintend the work of the Inspector of Nuisances in the way and to the extent that the Sanitary Authority shall approve, and on receiving information from the Inspector of Nuisances that his intervention is required in consequence of the existence of any nuisance injurious to health, or of any overcrowding in a house, he shall, as early as practicable, take such steps as he is legally authorised to take under any Statute in force in the District, or by any Resolution of the Sanitary Authority, as the circumstances of the case may justify and require.
- (8.) In any case in which it may appear to him to be necessary or advisable, or in which he shall be so directed by the Sanitary Authority, he shall himself inspect and examine any animal, carcase, meat, poultry, game, flesh, fish, fruit, vegetables, corn, bread, flour, or milk, and any other article to which the provisions of the Public Health Act, 1875, in this behalf shall apply, exposed for sale, or deposited for the purpose of sale or of preparation for sale, and intended for the food of man, which is deemed to be diseased, or unsound, or unwholesome, or unfit for the food of man; and if he finds that such animal or article is diseased, or unsound, or unwholesome, or unfit for the food of man, he shall give such directions as may be necessary for causing the same to be dealt with by a Justice according to the provisions of the Statutes applicable to the case.
- (9.) He shall perform all the duties imposed upon him by any byelaws and regulations of the Sanitary Authority, duly confirmed where confirmation is legally required, in respect of any matter affecting the public health, and touching which they are authorised to frame byelaws and regulations.
- (10.) He shall inquire into any offensive process of trade carried on within the District, and report on the appropriate means for the prevention of any nuisance or injury to health therefrom.

- (11.) He shall attend at the office of the Sanitary Authority or at some other appointed place, at such stated times as they may direct.
 - (12.) He shall from time to time report in writing to the Sanitary Authority his proceedings, and the measures which may require to be adopted for the improvement or protection of the public health in the District. He shall in like manner report with respect to the sickness and mortality within the District, so far as he has been enabled to ascertain the same.
 - (13.) He shall keep a book or books, to be provided by the Sanitary Authority, in which he shall make an entry of his visits, and notes of his observations and instructions thereon, and also the date and nature of applications made to him, the date and result of the action taken thereon and of any action taken on previous reports; and shall produce such book or books, whenever required, to the Sanitary Authority.
 - (14.) He shall also make an annual report to the Sanitary Authority, up to the end of December in each year, comprising a summary of the action taken, or which he has advised the Sanitary Authority to take, during the year for preventing the spread of disease, and an account of the sanitary state of his District generally at the end of the year. The report shall also contain an account of the inquiries which he has made as to conditions injurious to health existing in the District, and of the proceedings in which he has taken part or advised under any Statute, so far as such proceedings relate to those conditions; and also an account of the supervision exercised by him, or on his advice, for sanitary purposes over places and houses that the Sanitary Authority have power to regulate, with the nature and results of any proceedings which may have been so required and taken in respect of the same during the year. The report shall also record the action taken by him, or on his advice, during the year, in regard to offensive trades, to dairies, cow-sheds, and milk shops, and to factories and workshops. The report shall also contain tabular statements (on Forms to be supplied by Us, or to the like effect), of the sickness and mortality within the District, classified according to diseases, ages and localities:

Provided that, if the Medical Officer of Health shall cease to hold office, before the Thirty-first day of December in any year, he shall make the like report for so much of the year as shall have expired when he ceases to hold office.
 - (15.) He shall give immediate information to Us of any outbreak of dangerous epidemic disease within the District, and shall transmit to Us a copy of each annual report and of any special report. He shall make a special report to Us of the grounds of any advice which he may give to the Sanitary Authority with a view to their requiring the closure of any school or schools, in pursuance of the Code of Regulations approved by the Education Department, and for the time being in force.
 - (16.) At the same time that he gives information to Us of an outbreak of infectious disease or transmits to Us a copy of his annual report or of any special report, he shall give the like information or transmit a copy of such report to the County Council or County Councils of the County or Counties within which his District may be situated.
 - (17.) In matters not specifically provided for in this Order, he shall observe and execute any instructions issued by Us, and the lawful orders and directions of the Sanitary Authority applicable to his office.
 - (18.) Whenever We shall make regulations for all or any of the purposes specified in Section 134 of the Public Health Act, 1875, and shall declare the regulations so made to be in force within any area comprising the whole or any part of the District, he shall observe such regulations, so far as the same relate to or concern his office.
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Memorandum as to Annual Reports of Medical Officers of Health.

Every Medical Officer of Health in London, appointed under Order of the Local Government Board, is required to make an annual report with regard to each Sanitary District, or division of a District, which is under his superintendence. This report is to be for the year ending the 31st of December, or, if the Officer at that date has not been in office for a whole year, then for so much of the year as has elapsed since his appointment. The report is to be made to the Borough Council, and the Medical Officer of Health himself should send a copy of it to the Local Government Board and to the London County Council.* It should be made as soon as practicable after the expiration of the year to which it relates, and should be in the hands both of the Borough Council and of the Board, within, at most, five months from the end of the year. The Board's copy of the report should be forwarded to them when the original is sent to the Borough Council, except where the report is likely to be printed by order of the Borough Council. In such cases the Board need only be supplied with a printed copy. It is very desirable that the Annual Report should be printed, for the sake of facility of reference and in order that a supply of copies may be available for distribution among the Borough Councillors and other persons interested.

Article 18 (Section 15) of the Board's Order of 8th December, 1891, specifies the information to be contained in the Annual Report, and is annexed.

The report should be chiefly concerned with the conditions affecting health in the District and with the means for improving those conditions. It should contain an account, brought up to the end of the year under review, of the sanitary circumstances of the district, and of any improvement or deterioration which may have occurred during the year in these circumstances. Care should be taken to report fully and explicitly on the influences affecting or threatening to affect injuriously the public health in the district, and on the action which has been taken, or which may still be needed, with a view to combat those influences. It is of especial importance that the Medical Officer of Health should record what action has been taken to remedy unhealthy conditions which have been reported by him in previous annual reports, or in special reports presented during the year under review, and that attention should be called afresh, year by year, to such as remain unremedied.

* Where the District for which a Medical Officer of Health acted at the beginning of the year has, in consequence of the London Government Act, 1899, or of any Order made thereunder, been placed under the jurisdiction of two or more Borough Councils, the Medical Officer of Health should send to each Borough Council, either a report on the whole area for which he has acted during the previous year, or a report relating to so much of that area as on the 31st December of that year was under the jurisdiction of each such Borough Council. If one report only be made, the Medical Officer of Health should make such distinctions as will enable each Borough Council to ascertain the facts specially relating to its own District.

As subject matters concerning which the Board desire to obtain, through annual reports of the Medical Officer of Health, not only definite general information but record also of particular changes of condition that are occurring incidentally or by action of the local authority, the following deserve to be especially borne in mind :—

General features of the district, and conditions of its population.

House accommodation, especially for the working class : its adequacy and fitness for habitation. Sufficiency of open space about houses and cleanliness of surroundings. Unhealthy areas. Overcrowding.

Condition of sewers and house drains.

Removal and disposal of house refuse—whether by local authority or contractors : frequency and method.

Water supply of the District or its several parts.

Conditions under which slaughter-houses, bakehouses, dairies, cowsheds, and milkshops, factories and workshops, and offensive trades are carried on.

Nuisances : proceedings for their abatement—any remaining unabated.

Methods of dealing with infectious diseases : notification ; isolation in hospital ; disinfection ; temporary shelters ; mortuaries.

With regard to such points it should be remembered that these reports are for the information of the Board as well as of the Borough Council, and that a statement of the local circumstances and a history of local sanitary questions, which may seem superfluous for the latter, may often be needed by the former.

The Medical Officer of Health, in reporting his proceedings and advice, should put on record whether he has made systematic inspections of his district. By “systematic inspections” are meant inspections independent of such inquiries as the Medical Officer of Health may have had to make into particular outbreaks of disease, or into unwholesome conditions to which his attention has been specially called by complaints or otherwise, and such inspections will include the house-to-house inspections which may be necessary in particular localities.

In making systematic inspections, as in much of his other action, the Medical Officer of Health will usually have required the assistance of the Sanitary Inspectors ; and the Medical Officer should include in his report an account of the action which, at his instance, the Inspectors may have taken for the removal of nuisances injurious to health.

The report should deal with the extent, distribution, and causes of disease, especially of epidemic and notifiable diseases, within the district ; and should give an account of any noteworthy outbreaks which may have engaged the attention of the Medical Officer of Health during the year under review, stating the result of his investigations into their origin and propagation, and the steps taken by him or on his advice with a view to check their spread.

The tabular statements of sickness and mortality in the District during the year, to be made on the forms supplied for the purpose, should be the subject of comment in the text of the report, in so far as deductions from them may assist the Board and the Councils concerned to an appreciation of the lines of action needful in the future.

It will be observed that the forms for record of statistical data supplied on the present occasion differ from those supplied in former years. Four tables have, at the suggestion of the Incorporated Society of Medical Officers of Health, been substituted for Tables A and B previously in use. This has been done with a view to facilitate record of a minimum amount of statistical information of the sort desired by the Board.

As regards these several tables a few observations appear to be needful :

In Table I. should be stated, for the whole district under the superintendence of a Medical Officer of Health, the number and rates of births, of deaths under one year and at all ages, and the data on which the nett death-rate is based. Spaces are given for the insertion of the corresponding figures for the ten previous years for the sake of comparison, a comparison which will often yield points of interest. In most cases there should be no difficulty in obtaining the figures for former years from previous annual reports, but if owing to changes in the constitution of the district or for other reasons the figures cannot be ascertained for ten years, they should be given for as far back as they are available.

In Table II. the births, and the deaths corrected by the exclusion of those of non-residents and the inclusion of those of residents dying elsewhere, are to be distributed among the localities to which they belong, space being given in this table also for the insertion of the corresponding figures in previous years. As regards the classification by localities, it is to be observed that the District under the superintendence of a Medical Officer of Health may contain several parts evidently differing in their circumstances, or having very different rates of mortality, either from all causes, or from some particular disease or class of diseases. The observation of these differences can scarcely fail to lead to valuable information, especially when the returns for several years can be compared together, and it is in view of such differences that the tabular statements are required in Article 18 (Section 15) to be classified according to "*localities*," and that provision for such a classification is made in the forms supplied for returns of deaths. In the absence of any obvious differences of the above sort, it will still be desirable, unless the district is very small and has no recognized sub-divisions, to classify the deaths according to the part of the district in which they occur ; and for this purpose any areas of known population (such as wards, parishes or groups of parishes, or registration sub-districts) may be taken as representing "*localities*" for the purposes of the Order.

Table III. provides for the number of notified cases of infectious disease during the year, classified according to ages of patients and localities, and also the number of cases removed to hospital from each locality. As regards the classification according to locality, the same considerations apply to the record of sickness as to those of deaths.

Table IV. provides for the deaths during the year from various causes, classified according to ages and localities. In populous districts a more extended

table in a similar form containing a more complete classification of causes of death may with advantage be substituted for this form.

Great care should be taken to note carefully the headings and footnotes before proceeding to fill the columns and the blank spaces in these tables.

What has been said above with regard to the information which an annual report should contain must be understood, not as suggesting that the report should be limited to these subjects, but as indicating the sort of information required by the Board's Order. Many Medical Officers of Health will doubtless, with great advantage to the administration of their districts, furnish much more detailed information and statistics respecting particular questions to which they have been led by the circumstances of the foregoing year to devote attention, or in the investigation of which they may have arrived at definite conclusions. Any information of this kind will be appreciated by the Local Government Board.

W. H. POWER,
Medical Officer.

Local Government Board,
December, 1900.

EXTRACT from the ORDER of the LOCAL GOVERNMENT BOARD.

8th December, 1891.

Duties.

Art. 18. The following shall be the duties of a Medical Officer of Health as regards the District or part of a District for which he is appointed (in this article referred to as "his District") :—

- (1.) He shall inform himself as far as practicable respecting all influences affecting or threatening to affect injuriously the public health within his district.
- (2.) He shall inquire into and ascertain by such means as are at his disposal the causes, origin, and distribution of diseases within his District, and ascertain to what extent the same have depended on conditions capable of removal or mitigation.
- (3.) He shall by inspection of his District, both systematically at certain periods and at intervals as occasion may require, keep himself informed of the conditions injurious or dangerous to health existing therein.
- (4.) He shall be prepared to advise the Sanitary Authority on all matters affecting the health of his District, and on all sanitary points involved in the action of the Sanitary Authority; and in cases requiring it, he shall certify, for the guidance of the Sanitary Authority or of the Justices, as to any matter in respect of which the Certificate of a Medical Officer of Health or a Medical Practitioner is required as the basis or in aid of sanitary action.
- (5.) He shall advise the Sanitary Authority on any question relating to health involved in the framing and subsequent working of such byelaws and regulations as they may have power to make.
- (6.) On receiving information of the outbreak of any dangerous infectious disease within his District, he shall visit without delay the spot where the outbreak has occurred, and inquire into the causes and circumstances of such outbreak, and in case he is not satisfied that all due precautions are being taken he shall advise the persons competent to act as to the measures which may appear to him to be required to prevent the extension of the disease, and shall take such measures for the prevention of disease as he is legally authorised to take under any Statute in force in the District or by any Resolution of the Sanitary Authority.
- (7.) Subject to the instructions of the Sanitary Authority, he shall direct or superintend the work of the Sanitary Inspector or Sanitary Inspectors in the way and to the extent that the Sanitary Authority shall approve, and on receiving information from any Sanitary Inspector that his intervention is required in connexion with any nuisance, he shall, as early as practicable, take such steps as he is legally authorised to take under any Statute in force in the District, or by any Resolution of the Sanitary Authority, as the circumstances of the case may justify and require.
- (8.) In any case in which it may appear to him to be necessary or advisable or in which he shall be so directed by the Sanitary Authority, he shall himself inspect and examine any animal intended for the food of man which is exposed for sale or deposited in any place for the purpose of sale or of preparation for sale, and any article, whether solid or liquid, intended for the food of man, and sold or exposed for sale, or deposited in any place for the purpose of sale or of preparation for sale. If such animal or article appears to him to be diseased, or unsound, or unwholesome, or unfit for the food of man, he shall seize and carry away the same himself or by an assistant in order to have the same dealt with by a Justice according to the provisions of Section 47 of the Public Health (London) Act, 1891.
- (9.) He shall perform all the duties imposed upon him by any byelaws and regulations of the Sanitary Authority, duly confirmed where confirmation is legally required, in respect of any matter affecting the public health, and touching which the Sanitary Authority are authorised to frame byelaws and regulations.
- (10.) He shall inquire into any offensive process of trade carried on within his District, and report on the appropriate means for the prevention of any nuisance or injury to health therefrom.
- (11.) He shall from time to time inspect any Bakehouses which are Workshops, and are situate within his District, and he shall thereupon report to the Sanitary Authority whether any steps are necessary to be taken for the purpose of enforcing, as respects such Bakehouses, the provisions of Sections 34, 35, and 81 of the Factory and Workshop Act, 1878, and Sections 15 and 16 of the Factory and Workshop Act, 1883.
- (12.) He shall attend at the office of the Sanitary Authority or at some other appointed place, at such stated times as they may direct.
- (13.) He shall from time to time report in writing to the Sanitary Authority his proceedings and the measures which may require to be adopted for the improvement or protection of the public health in his District. He shall in like manner report with respect to the sickness occurring within his District, and the mortality thereof, so far as he is able to ascertain the same.

- (14.) He shall keep a book or books, to be provided by the Sanitary Authority, in which he shall make an entry of his visits, and notes of his observations and instructions thereon, and also the date and nature of applications made to him, the date and result of the action taken thereon and of any action taken on previous reports; and shall produce such book or books, whenever required, to the Sanitary Authority.
- (15.) He shall also make an annual report to the Sanitary Authority, up to the Thirty-first day of December in each year, comprising a summary of the action taken, or which he has advised the Sanitary Authority to take, during the year for preventing the spread of disease, and an account of the sanitary state of his District generally, at the end of the year. The report shall also contain an account of the inspections and inquiries which he has made as to conditions injurious or dangerous to health existing in his District, and of the proceedings in which he has taken part or advised under any Statute, so far as such proceedings relate to those conditions; and also an account of the supervision exercised by him, or on his advice, for sanitary purposes over places and houses that the Sanitary Authority have power to regulate with the nature and results of any proceedings which may have been so required and taken in respect of the same during the year. The report shall also record the action taken by him, or on his advice, during the year, in regard to offensive trades, to factories and workshops, and to dairies. The report shall also contain tabular statements (on Forms to be supplied by us, or to the like effect) of the sickness and mortality within his District, classified according to diseases, ages, and localities:
- Provided that, if the Medical Officer of Health shall resign or be removed before the Thirty-first day of December in any year, he shall thereupon make the like report for that part of the year during which he has held office.
- (16.) He shall give immediate information to Us of any outbreak of dangerous epidemic disease within his District. He shall transmit to Us a copy of each annual report and of any special report made by him. On his advising the Sanitary Authority with a view to their requiring the closure of any school or schools, in pursuance of the Code of Regulations approved by the Education Department and for the time being in force, he shall forthwith report specially to Us the grounds of his advice.
- (17.) At the same time that he gives information to Us of an outbreak of dangerous epidemic disease, or transmits to Us a copy of his annual report or of any special report, he shall give the like information or transmit a copy of such report to the London County Council.
- (18.) In matters not specifically provided for in this Order, he shall observe and execute any instructions issued by Us, and the lawful orders and directions of the Sanitary Authority applicable to his office.
- (19.) Whenever We shall make regulations for all or any of the purposes specified in Section 134 of the Public Health Act, 1875, as extended to London by Section 113 of the Public Health (London) Act, 1891, and shall declare the regulations so made to be in force within his District or any part thereof he shall observe such regulations, so far as the same relate to or concern his office.
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TABLE I.

Name of District _____

For Whole District.

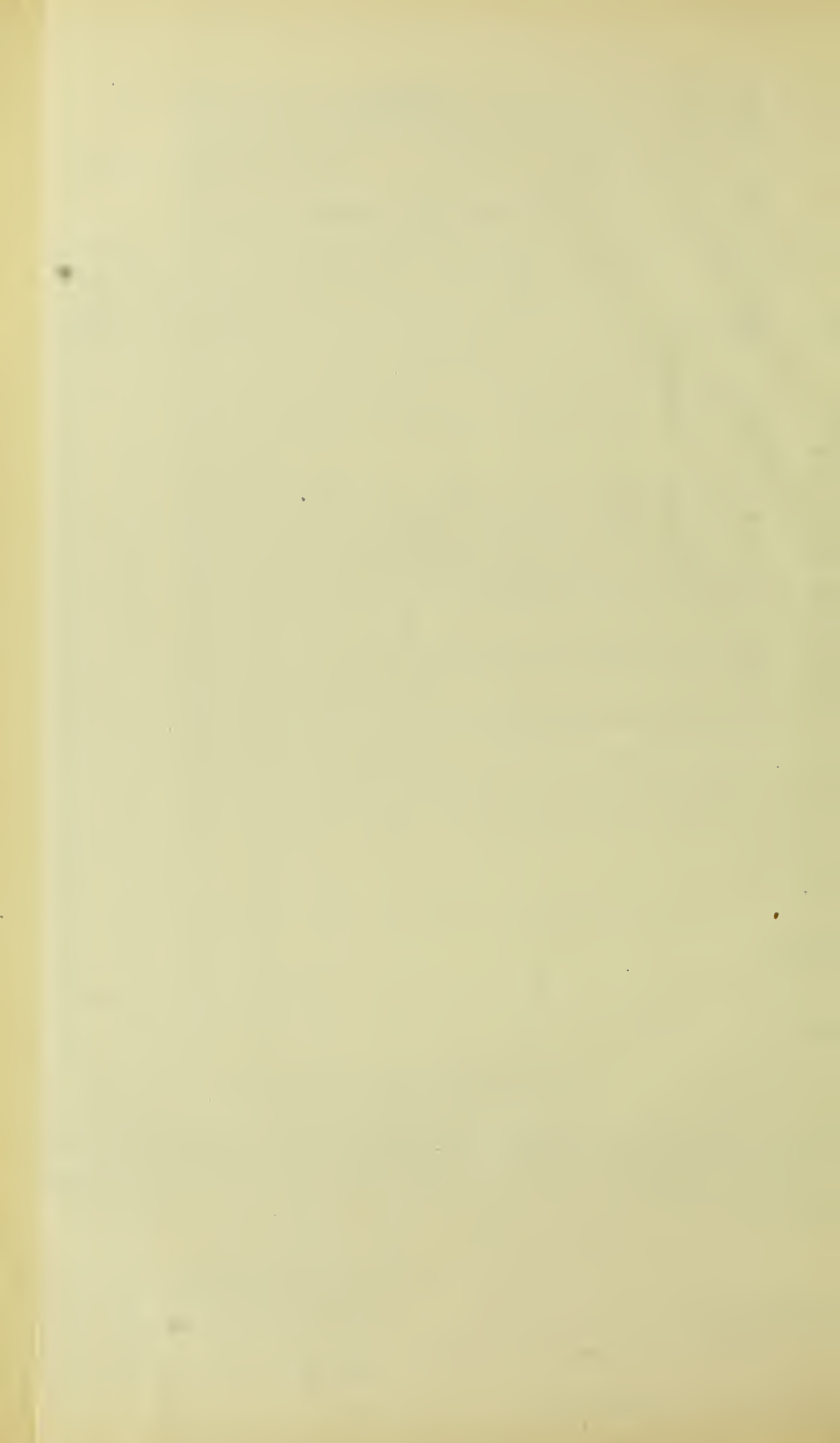
YEAR.	Population estimated to Middle of each Year.	BIRTHS.		DEATHS UNDER ONE YEAR OF AGE.		DEATHS AT ALL AGES. TOTAL.		DEATHS IN PUBLIC INSTITUTIONS.	Deaths of Non-residents registered in District.	Deaths of Residents registered beyond District.	DEATHS AT ALL AGES. NETT.	
		Number.	Rate.*	Number.	Rate per 1,000 Births registered.	Number.	Rate.*				Number.	Rate.*
1	2	3	4	5	6	7	8	9	10	11	12	13
1890.												
1891.												
1892.												
1893.												
1894.												
1895.												
1896.												
1897.												
1898.												
1899.												
Averages for years 189-1899.												
1900.												

* Rates calculated per 1,000 of estimated population.

NOTE.—The deaths to be included in Column 7 of this table are the whole of those registered during the year as having actually occurred within the district or division. The deaths to be included in Column 12 are the number in Column 7, corrected by the subtraction of the number in Column 10 and the addition of the number in Column 11.

By the term “Non-residents” is meant persons brought into the district on account of illness, and dying there; and by the term “Residents” is meant persons who have been taken out of the district on account of illness, and have died elsewhere.

Area of District in acres (exclusive of area covered by water).	Total population at all ages.....	Number of inhabited houses.....	Average number of persons per house.....	At Census of 1891.



NAMES OF LOCALITIES.	1. _____				2. _____				3. _____				4. _____				5. _____				6. _____				7. _____			
	Population esti- mated to middle of each Year.	Births regis- tered.	Deaths at all Ages.	Deaths under 1 year.	Population esti- mated to middle of each Year.	Births regis- tered.	Deaths at all Ages.	Deaths under 1 year.	Population esti- mated to middle of each year.	Births regis- tered.	Deaths at all Ages.	Deaths under 1 year.	Population esti- mated to middle of each year.	Births regis- tered.	Deaths at all Ages.	Deaths under 1 year.	Population esti- mated to middle of each year.	Births regis- tered.	Deaths at all Ages.	Deaths under 1 year.	Population esti- mated to middle of each year.	Births regis- tered.	Deaths at all Ages.	Deaths under 1 year.	Population esti- mated to middle of each year.	Births regis- tered.	Deaths at all Ages.	Deaths under 1 year.
1890 ...	a.	b.	c.	d.	a.	b.	c.	d.	a.	b.	c.	d.	a.	b.	c.	d.	a.	b.	c.	d.	a.	b.	c.	d.	a.	b.	c.	d.
1891 ...																												
1892 ...																												
1893 ...																												
1894 ...																												
1895 ...																												
1896 ...																												
1897 ...																												
1898 ...																												
1899 ...																												
Averages of Years 189 to 1899.																												
1900 ...																												

NOTES.—(a) The separate localities adopted for this table should be areas of which the populations are obtainable from the census returns, such as wards, parishes or groups of parishes, or registration sub-districts. Block 1 may, if desired, be used for the whole district : and blocks 2, 3, &c., for the several localities. In small districts without recognised divisions of known population this Table need not be filled up.

(b) Deaths of residents occurring beyond the district are to be included in sub-columns *c* of this table, and those of non-residents registered in the district excluded. (See note on Table I. as to meaning of terms "resident" and "non-resident.")

(c) Deaths of residents occurring in public institutions are to be allotted to the respective localities, according to addresses of the deceased.



Cases of Infectious Disease notified during the Year 19

District

NOTIFIABLE DISEASE.	CASES NOTIFIED IN WHOLE DISTRICT.						TOTAL CASES NOTIFIED IN EACH LOCALITY.							No. OF CASES REMOVED TO HOSPITAL FROM EACH LOCALITY.						
	At all Ages.	At Ages†—Years.					1	2	3	4	5	6	7	1	2	3	4	5	6	7
		Under 1.	1 to 5.	5 to 15.	15 to 25.	25 to 65.														
Small-pox ...																				
Cholera ...																				
Diphtheria ...																				
Membranous croup ...																				
Erysipelas ...																				
Scarlet fever ...																				
Typhus fever ...																				
Enteric fever ...																				
Relapsing fever ...																				
Continued fever ...																				
Puerperal fever ...																				
Plague ...																				
*																				
Totals ...																				

NOTES.—The localities adopted for this table should be the same as those in Tables II. and IV. State the name of the isolation hospital, if any, used by the sick of the district. Mark (H) the locality in which it is situated, or if not within the district, state where it is situated, and in what district.

* This space may be used for record of other disease the notification (compulsory or voluntary) of which is in force in the district.

† These age columns for notifications should be filled up in all cases where the Medical Officer of Health, by inquiry or otherwise, has obtained the necessary information.

NOTES.—(a) The deaths of residents occurring beyond the limits of the district are to be included in this table, and deaths of non-residents occurring in the district are to be excluded. See note on Table I. as to meaning of "Residents" and Non-residents."

(b) Deaths of residents occurring in public institutions are to be allotted to the respective localities according to the addresses of the deceased as given by the Registrars, and, in addition, to be classified under "Public Institutions."

(c) Under the heading of "Diarrhœa" are to be included deaths certified as from diarrhœa, alone or in combination with some other cause of ill-defined nature; and also deaths certified as from

Epidemic enteritis;

Zymotic enteritis;

Epidemic diarrhœa. Summer diarrhœa;

Dysentery and dysenteric diarrhœa;

Choleraic diarrhœa, cholera, cholera nostras (in the absence of Asiatic cholera).

Under the heading of "Enteritis" are to be included those certified as from Gastro-enteritis, Muco-enteritis and Gastric catarrh, unless from information obtained by enquiry from the certifying practitioner or otherwise, the Medical Officer of Health should have reason for including such deaths, especially those of infants, under the specific term "Diarrhœa."

Deaths from diarrhœa secondary to some other well-defined disease should be included under the latter.

In recording the facts under the various headings of Tables I., II., III. and IV., attention has been given to the notes on the Tables.

Medical Officer of Health.

Date _____ 1901.

Circular.

Sanitary Authorities.

25

Order of Council declaring Carbolic Acid a Poison.

LOCAL GOVERNMENT BOARD,

WHITEHALL, S.W.,

10th January, 1901.

SIR,

Orders of Council
of 31st January, 1899, and
23rd July, 1900.

I am directed by the Local Government Board to enclose a copy of an Order made by the Lords of Her Majesty's Most Honourable Privy Council approving a Resolution passed by the Pharmaceutical Society of Great Britain that liquid preparations of Carbolic Acid and its homologues containing more than three per cent. of those substances should, except in certain cases connected with agriculture and horticulture, be deemed poisons within the meaning of the Pharmacy Act, 1868, and the Second Part of Schedule A to that Act.

The Board have reason to believe that, in a very large number of cases where local authorities disinfect or procure the disinfection of premises and things which have been exposed to infection, the disinfectant employed is Carbolic Acid. They desire to take this opportunity therefore, of pointing out that whenever the disinfectant employed is Carbolic Acid, or any other poison within the meaning of the Pharmacy Act, 1868, only bottles similar to those prescribed by the Regulations adopted by the Pharmaceutical Society of Great Britain, and approved by an Order of the Lords of the Council, dated the 31st January, 1899, should be used to contain it.

A copy of the last-mentioned Order is also enclosed.

I am, SIR,

Your obedient Servant,

L. B. Provis.

Secretary.

The Town Clerk, or

Clerk to the District Council.



AT the Council Chamber, Whitehall, the 31st day of January, 1899.

By a Committee of the Lords of Her Majesty's Most Honourable
Privy Council.

Present :

Lord President,
Marquess of Lansdowne,
Sir John Gorst.

WHEREAS by Section 1 of "The Pharmacy Act, 1868," it is enacted that it shall be unlawful for any person to sell or keep open shop for retailing, dispensing, or compounding Poisons, or to assume or use the title "Chemist and Druggist," or Chemist or Druggist, or Pharmacist, or Dispensing Chemist or Druggist, in any part of Great Britain, unless such person shall be a Pharmaceutical Chemist, or a Chemist and Druggist within the meaning of that Act, and be registered under that Act, and conform to such Regulations as to the keeping, dispensing, and selling of such Poisons as may from time to time be prescribed by the Pharmaceutical Society with the consent of the Privy Council :

AND WHEREAS the Pharmaceutical Society of Great Britain did, on the 11th day of January, 1899, adopt the following Regulations for the keeping, dispensing, and selling of Poisons within the meaning of "The Pharmacy Act, 1868," in accordance with the provisions set forth in Section 1 of that Act :—

- "1. *That in the keeping of poisons, each bottle, vessel, box, or package containing a poison be labelled with the name of the article, and also with some distinctive mark indicating that it contains poison.*
- "2. *Also that in the keeping of poisons, each poison be kept on one or other of the following systems, viz. :—*
 - "(a) *In a bottle or vessel tied over, capped, locked or otherwise secured in a manner different from that in which bottles or vessels containing ordinary articles are secured in the same warehouse, shop, or dispensary ; or*
 - "(b) *In a bottle or vessel rendered distinguishable by touch from the bottles or vessels in which ordinary articles are kept in the same warehouse, shop, or dispensary ; or*
 - "(c) *In a bottle, vessel, box, or package kept in a room or cupboard set apart for dangerous articles.*
- "3. *That in the dispensing and selling of poisons, all liniments, embrocations, and lotions containing poison be sent out in bottles rendered distinguishable by touch from ordinary medicine bottles, and that there also be affixed to each such bottle (in addition to the name of the article, and to any particular instructions for its use) a label giving notice that the contents of the bottle are not to be taken internally."*

AND WHEREAS the said Society has submitted the said Regulations for the consent of the Privy Council :

NOW, THEREFORE, the Lords of the Council are hereby pleased to signify their consent to the said Regulations.

A. W. FITZROY.



AT the *Council Chamber, Whitehall*, the 26th day of *July*, 1900.

By the Lords of Her Majesty's Most Honourable Privy Council.

Present :

Lord President,
Secretary Sir M. W. Ridley,
Sir John Gorst.

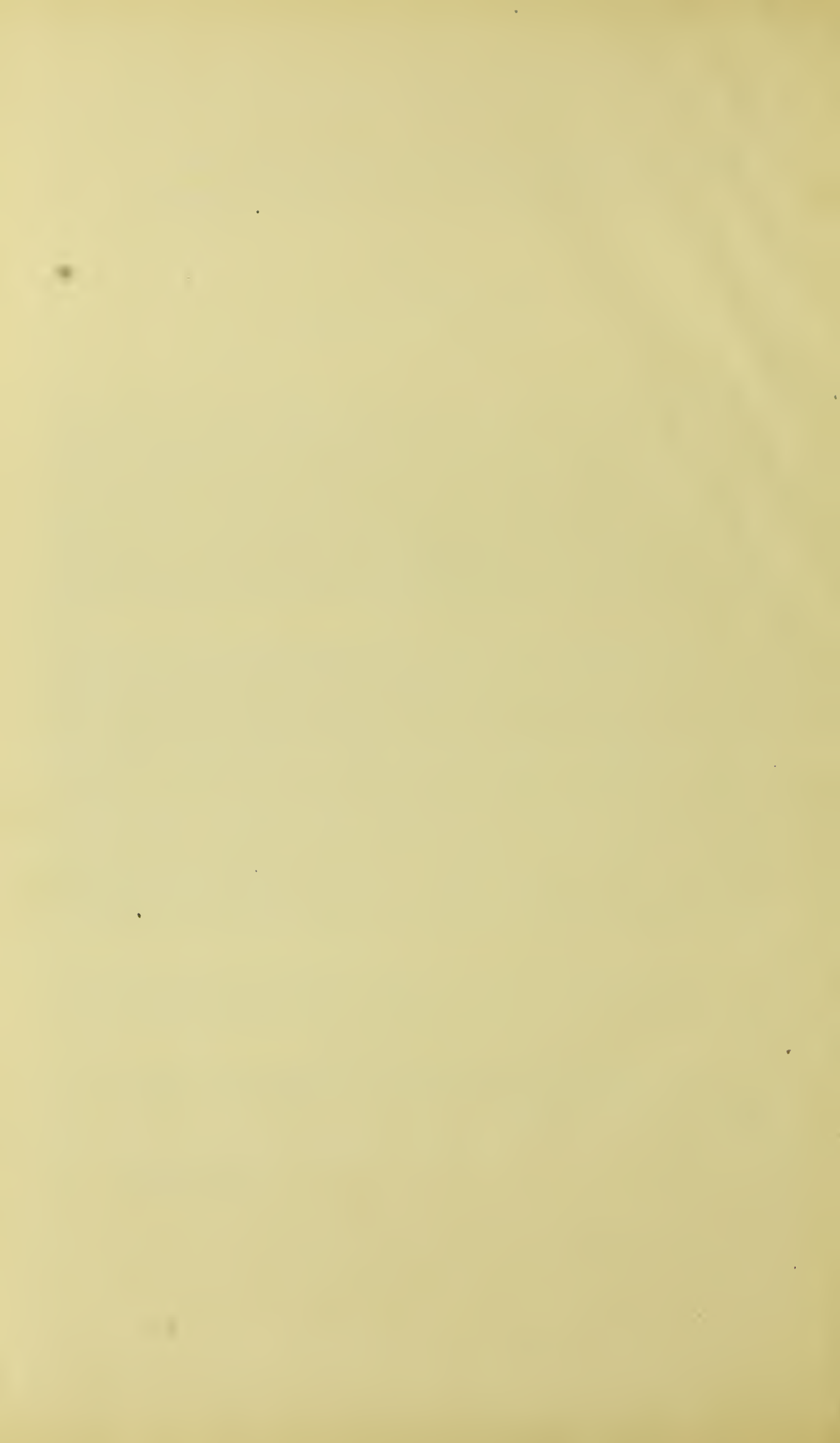
WHEREAS by "The Pharmacy Act, 1868," section 2, it is enacted that the Council of the Pharmaceutical Society of Great Britain may from time to time, by Resolution, declare that any Article in such Resolution named ought to be deemed a poison within the meaning of that Act; and thereupon the said Society shall submit the same for the approval of the Privy Council, and that, if such approval shall be given, then such Resolution and approval shall be advertised in the London Gazette, and on the expiration of one month from such advertisement the Article named in such Resolution shall be deemed to be a poison within the meaning of that Act :

AND WHEREAS the Council of the Pharmaceutical Society of Great Britain did on the fourth day of July, one thousand nine hundred, resolve and declare, by virtue and in exercise of the powers vested in the Council of the Pharmaceutical Society of Great Britain, that liquid preparations of Carbolic Acid and its homologues containing more than three per cent. of those substances, except any preparation prepared for use as sheep-wash or for any other purpose in connection with agriculture or horticulture, and contained in a closed vessel, distinctly labelled with the word "Poisonous," the name and address of the seller and a notice of the agricultural or horticultural purpose for which the preparation has been prepared, ought to be deemed poisons within the meaning of the Pharmacy Act, 1868, and ought to be deemed poisons in the second part of the Schedule A of the said Pharmacy Act, 1868 :

AND WHEREAS the said Society have submitted the said Resolution for the approval of the Privy Council, and the Lords of the Privy Council are of opinion that the said Resolution should be approved :

NOW, THEREFORE, their Lordships are hereby pleased to signify their approval of the said resolution.

A. W. FITZROY.



Richard Reece

Vaccination Against Typhoid (Enteric) Fever. 26

I.—PRINCIPLES UPON WHICH THE ANTI-TYPHOID INOCULATIONS ARE BASED.

It has been firmly established by laboratory experiments that animals which have been inoculated with dead cultures of typhoid bacilli possess, as compared with normal animals, an increased power of resisting infection by living typhoid bacilli.

It may be inferred with probability from these experiments that inoculations with dead typhoid bacilli will, in like manner, confer upon man an increased power of resisting typhoid infection.

This expectation is further justified by two facts. First, it is justified by the fact that the anti-typhoid inoculations induce in man precisely the same blood changes which they induce in animals. Further, it is justified by the fact that the blood changes, which are induced in man by the anti-typhoid inoculations, are precisely the same as those which are induced in him by an actual attack of typhoid fever. The importance of this last fact becomes clear when it is considered that the insusceptibility against further attack which supervenes upon an attack of typhoid fever is almost certainly dependent upon the occurrence of the particular blood changes which are here in question.

II.—COMPOSITION AND METHOD OF PUTTING UP THE ANTI-TYPHOID VACCINE.

The vaccines consist of sterilized typhoid cultures. These cultures have in some cases been grown on agar-agar, but, as a rule, they have been grown in nutrient broth for from three to four weeks.

The vaccines are put up—(a) in sealed glass capsules, (b) in small glass bottles which are covered by paraffined india-rubber caps.

The vaccine which is put up in glass capsules is to be employed when only one or two vaccinations are undertaken at the same time. The vaccine which is contained in the bottles is to be employed when a larger series of vaccinations are to be undertaken.

After the sterility of each sample of vaccine has been determined, a small quantity of antiseptic is added with a view to securing it against the possibility of subsequent contamination.

III.—METHOD OF DRAWING OFF AND OF INJECTING THE ANTI-TYPHOID VACCINE.

(1.) *Method of sterilizing the Hypodermic Syringe.*—The hypodermic syringe may be most conveniently sterilized by filling it in with sweet oil,*

* *Note.*—It will be obvious that the advantage which is obtained by the substitution of oil for water as a sterilizing agent, consists in the fact that, owing to the higher boiling point of oil, a temperature higher than that of 100° C. can be brought to bear upon the articles which are to be sterilized. A saving of time is hereby effected. Another advantage which is incidental to the use of the oil is the preservation of the hypodermic needles from rust.

which has been brought to the temperature of 140° to 160° C. The oil may be heated over a spirit lamp in any shallow vessel (in default of a better vessel it may be heated in a table-spoon). A piece of ordinary bread crumb serves as a useful thermometer. The point at which a sufficiently high temperature is attained is indicated by bread *beginning* to turn brown. When this temperature has been attained* the hot oil is drawn up into the syringe. Sterilization will be complete as soon as the hot fluid has come into contact with the whole of the interior of the barrel.

Lastly, the needle is to be sterilized by dipping it into the hot oil. This done, it is to be firmly fixed down upon the nozzle of the sterilized syringe by a screwing motion.

(2.) *Method of drawing off the contents of the Vaccine Capsules.*—First thoroughly shake up the contents of the capsule so as to bring into suspension the bacterial deposit which may be adhering to the walls. Then sterilize the tip of the capsule in the flame. This done, carefully break off this tip with a pair of sterilized forceps or, better, cut it off with a pair of sterilized scissors. Now hold the sterilized syringe needle-upwards and invert the capsule over the point of the needle. The contents of the capsule may now be drawn off aseptically into the syringe. While drawing out the piston of the syringe, care must be taken to keep the point of the hypodermic needle continuously below the surface of the fluid in the capsule.

(3.) *Method of drawing off the Vaccine from the Rubber-Capped Bottles.*—First thoroughly shake up the contents of the bottle, so as to bring into suspension the bacterial deposit which will have accumulated on the floor or sides of the bottle. Then melt off the paraffin and sterilize the surface of the cap by dipping it into a boiling 5 % solution of carbolic acid. This done, fix the bottle mouth downwards in a clamp† at a convenient height above the table. Now pierce the rubber cap with the sterilized needle of the hypodermic syringe and withdraw the needle. This first puncture, be it noted, is to serve only as an air-hole. Having now made provision for the entrance of air, pass in the needle again into the bottle through another portion of the rubber cap. The vaccine will now‡ on drawing out the piston pass into the syringe.

When the contents of the syringe have been used up, and the syringe is to be filled in again, the needle must be resterilized before it is reintroduced into the bottle of vaccine. The necessary sterilization may be effected by merely dipping the needle as before into the superheated oil.

When the series of inoculations has been completed, the surface of the rubber cap is to be flushed with spirit. On the evaporation of this spirit, the punctures in the rubber cap may be closed either by immersing the whole rubber cap into a vessel containing very hot melted§ paraffin, or by coating over the surface of the cap with some dissolved rubber solution. In any case, where the vaccine is to be employed again, the greatest care must be exercised to see that it is sealed up air-tight.

(4.) *Instructions as to the method of injecting the Vaccine.*

(a.) *Choice of a site for the injection.*—With a view to diminishing the pain which is consequent upon serous effusion, and with a view to facilitating the absorption of such serous effusion, it is advisable to inoculate into the flank, where the subcutaneous tissue is loose, rather than into the arm where the skin is more tightly tied down to the underlying tissues.

* *Note*—If the plunger, or any other of the fittings of the syringe, is made of india-rubber care must be taken to see that the temperature of the oil or glycerine does not rise beyond the point indicated above.

† *Note*.—Where a retort stand and clamp are not available, the bottle of vaccine may be simply laid on its side on a table or held by an assistant.

‡ *Note*.—Difficulties in drawing off the vaccine can only occur in cases where the tip of needle becomes blocked with paraffin. This difficulty, which will not occur if the instructions as to removing the paraffin are carefully carried out, can easily be remedied by passing the tip of the needle through the flame.

§ *Note*.—The hard paraffin which is employed in laboratories is the most suitable for this purpose. Where this is not available, a piece of ordinary paraffin candle may be melted down with a drop or two of sweet oil. The india-rubber solution which is used for mending bicycle tyres may be employed for repairing the needle punctures after the orifice of the collapsible tube has been flamed. Frequent experiment has shown that the solution itself may be taken as sterile.

These considerations are of especial importance in dealing with lymphatic persons, in whom a not inconsiderable amount of effusion is prone to occur.

(b.) *Method of making the Injection.*—The most convenient method of making the injection is to pick up a thick fold of skin between the finger and thumb, and then to pass the needle well down into the subcutaneous tissue in the centre of this fold.

In every case it is advisable to wash the skin with an antiseptic solution before inserting the needle.

(c.) *Additional Instructions as to the procedure which is to be adopted when undertaking a series of Inoculations.*—When inoculating a number of persons in series it will be a matter of convenience to employ a 5 c.c. syringe, which will contain sufficient vaccine for some 5 to 10 inoculations. The interior of the syringe will not require to be resterilized after each separate inoculation, inasmuch as nothing can pass into the interior of the syringe while the inoculations are proceeding. It will suffice to ensure the antisepticity of the whole proceedings if the hypodermic needle be resterilized after the completion of each separate inoculation by immersion in a vessel of oil which is kept at a temperature of well over 100° C.

IV.—DOSAGE.*

The dose of vaccine which is to be administered is in every case specified upon the bottles and capsules. It is to be understood that the dose which is specified is the dose which is applicable to an ordinary male adult. In dealing with women, children, or with persons of feeble physique, the dose is to be proportionately reduced. Further, it is to be understood that the dose, as specified on the capsules and bottles, applies only to the first vaccination. Where a second vaccination is undertaken, within ten days or a fortnight after the first vaccination, one and a half to twice the original dose may be administered. In this case the operator will do well to guide himself in the selection of his dose by the severity or otherwise of the symptoms which have been produced by the first vaccination.

V.—CLINICAL SYMPTOMS WHICH MAY BE EXPECTED TO RESULT FROM THE ANTI-TYPHOID INOCULATION.

The clinical symptoms which result from anti-typhoid inoculations are subject to considerable individual variations.

(1.) *Constitutional Symptoms.*—Some degree of malaise and some slight tendency to faintness may be expected in every case. In a very small percentage of cases there may be a definite rigor or even a certain amount of collapse. These symptoms may be expected between the first and the sixth hour. Where they are at all severe it is the rule for them to come on before the expiration of the third hour.

These preliminary symptoms are followed by a certain amount of fever. The average temperature which is attained is about 101° F. In exceptional cases the fever may go as high as 103° F. The fever generally passes off completely at the end of 18 to 24 hours, but it may, in exceptional cases, persist for another 24 hours.

* *Note.*—The dose which is prescribed is arrived at by taking into consideration (a) the toxic effect as determined on guinea-pigs; (b) quantity of agglutinins and bactericidal substances developed in the blood of animals inoculated with a measured dose of the vaccine, and (c) the number of bacteria present in the vaccine. In almost every case the data which have been obtained on animals have been before the vaccine is sent out further checked by direct observations on man.

(2.) *Local Symptoms.*—In every case a certain amount of local tenderness will develop. This will generally begin to make itself felt about five to six hours after the inoculation. Somewhat later a red blush will appear around the site of inoculation. The local tenderness will be at its worst in about 18 hours. In many cases the skin will then be red over an area of four to five inches square and lines of injected lymphatics will often be traceable upwards into the armpit (along the border of the pectoralis major), and downwards into the groin. There may in addition be slight tenderness in the groin or armpit. These local symptoms will have practically passed away after the expiration of 48 hours.

In some cases where the constitutional symptoms are severe, there is on almost complete absence of local reaction.

VI.—SUGGESTIONS AS TO THE TREATMENT WHICH MAY BE ADOPTED FOR THE ALLEVIATION OF THE CLINICAL SYMPTOMS WHICH SUPERVENE UPON THE INOCULATION.

The most important point which has to be attended to after the inoculation is the possibility of the supervention of faintness. This may be best guarded against by enforcing upon the patient the necessity of remaining as quiet as possible after the inoculation. Exposure to the sun in tropical countries and violent exercise are at any rate to be carefully avoided. These ends are, in the case of soldiers and others, most easily achieved by choosing the late afternoon as the time for the performance of the inoculations. The patients are to be enjoined to go and lie down as soon as they feel at all ill.

It is best not to interfere in any way with the fever which supervenes.

In connection with the alleviation of the local swelling and tenderness, it will be found that the tendency to serous effusion will be greatest in persons whose blood coagulability is naturally abnormally low. The serous effusion can in such persons be held in check by the administration of 30 grains of calcium chloride, *cryst.* This dose may be administered at the time of inoculation, and may be repeated six to twelve hours afterwards. The local tenderness and stiffness which supervene from the inoculation may always be sensibly relieved by the application of hot water stupes.

The serous effusion is aggravated by alcohol.

VII.—REMARKS ON THE QUESTION OF THE ADVISABILITY OF SECOND INOCULATIONS.

Comparative observations on the condition of the blood in once and twice inoculated patients have shown in the most distinct manner that the antidotal substances which are produced in the blood by the first inoculation are considerably increased under the influence of a second inoculation.

There can therefore be no doubt that a patient will always reap considerable additional protection from a repetition of the inoculation.

This inference has been confirmed by actual experience, the additional immunity conferred by double inoculation having been very considerable.

VIII.—DATE AT WHICH THE SECOND INOCULATION OUGHT TO BE UNDERTAKEN.

It is well in all cases to postpone the second inoculation until eight or ten days have elapsed from the date of the first inoculation. In other words, it is well to abstain from introducing further typhoid toxin into a patient until his system has completely neutralised the toxin which was introduced at the first inoculation.

When the last result has been achieved, the symptoms (in particular the constitutional symptoms) supervening after a second inoculation are much less severe than those supervening after the first inoculation.

IX.—METHOD OF TESTING THE EFFECT OF AN ANTI-TYPHOID VACCINATION.

The method of testing the result of an anti-typhoid vaccination has been fully described in a series of papers which have emanated from the Pathological Laboratory of the Army Medical School. These papers were published in the *British Medical Journal* of January 30th, 1897, May 15th, 1897, and February 5th, 1898; and in the *Lancet* of March 6th, 1897, and December 1st, 1900.

In its essentials the method of testing for the presence of agglutinins is as follows:—A small quantity of blood is withdrawn from a prick in the finger. The serum which is obtained from this blood is diluted 5, 25, 50, and 100 fold. Each of these dilutions is mixed in a capillary pipette with its own volume of a recently prepared dead typhoid emulsion. If the vaccine has produced its desired effect upon the patient's blood, the phenomena of agglutination and sedimentation will be observed to occur in each of these serum dilutions. In other words, the patient's serum will, in a 10, 50, 100, and 200 fold dilution, be found to exert a chemical effect upon the protoplasm of the typhoid bacteria.

The method of quantitatively determining the bactericidal power is essentially similar, except for the fact that a living gelatine or broth culture is employed. In the latter case the survival or destruction of the typhoid bacteria is tested by blowing out the contents of the capillary tube upon agar.

X.—QUESTION AS TO THE DURATION OF THE IMMUNITY WHICH IS CONFERRED BY THE ANTI-TYPHOID INOCULATIONS.

Two entirely distinct series of data will ultimately be available for the solution of this question. On the one hand it will probably be possible to determine the duration of immunity by making observations on blood which has been drawn off from vaccinated persons at various intervals after their last inoculation. For it may be taken as probable that the protection persists as long as the antidotal substances, which are produced by the inoculation, are to be found in the blood. On the other hand, it will clearly be possible, in cases where large and compact bodies of inoculated men are continuously exposed to typhoid infection, to infer the persistence of the protection from their continued immunity from attack. In cases of this sort the proof of continued protection will, of course, be incomplete, unless typhoid is occurring in uninoculated persons who are living under the same conditions.

Owing to the fact that anti-typhoid inoculations have been only so recently introduced, and owing also to the difficulties which are associated with the collection of data from inoculated persons who are scattered all over the world, it has not yet been possible to collect sufficient statistics to give any definite answer to the question as to the duration of the immunity.

Such few data as have already been collected may be summarised as follows:—

Blood examinations which have been made, some at an interval of one year, and others at an interval of two years after inoculation, have shown that, in a large percentage of cases, the antidotal substances persist, in diminished but still very sensible quantities, for a minimum of one to two years after inoculation.

Further, such reports as have been received regarding the continued immunity of the inoculated seem, so far as they go, to warrant the conclusion that a protective influence persists for a minimum of one to two years.

XI.—KEEPING OF RECORDS AND COLLECTION OF DATA WITH RESPECT TO THE EFFICACY OR OTHERWISE OF ANTI-TYPHOID VACCINATIONS.

It is earnestly requested that, in every case a record of the inoculations which have been performed may be sent with the least possible delay to the undersigned. These records should specify the name, age, and occupation or rank of the inoculated persons.

Further, it is earnestly requested that any evil effects which are observed to supervene upon the injection of the vaccine, or any facts which throw any doubt on the efficacy of the vaccine, may be immediately reported.

Lastly, it is requested that any facts which go to show that protection is afforded by these inoculations may be similarly reported. In cases where the inoculated have escaped attack, while the uninoculated have been attacked, it is requested that the names of the inoculated and uninoculated shall in all cases be given, and that any differences which may have existed between the conditions of life of the inoculated and uninoculated may be fully pointed out.

In collecting data with regard to the effect of the anti-typhoid inoculations, attention ought to be further directed to the following points:—

(a.) *The anti-typhoid inoculations will do nothing to check an incipient attack of typhoid fever.*

The fact that the anti-typhoid inoculations do nothing to check an incipient attack of typhoid fever must be borne in mind whenever these inoculations are undertaken in the actual presence of a typhoid epidemic. For, under such circumstances, it will every now and then happen that a man will present himself for inoculation when he is already in the incubation stage of the fever. If such a man is inoculated, the fever which he is incubating may be expected to run its ordinary course.

(b.) *The protection which is conferred by the anti-typhoid inoculations is probably not established till after the expiration of 10 days or more.*

This consideration has an obvious importance in view of the fact that a man who is continuously exposed to the typhoid infection may possibly take in that infection in the period which supervenes immediately after inoculation. Cases of this kind, if they can be shown actually to occur, obviously ought not to be imputed to any defect in the vaccine.

(c.) *The blood of patients who have been inoculated against typhoid gives Widal's reaction, just in the same way as the blood of a patient who is suffering from an actual attack of typhoid fever.*

This fact is of importance in connection with the occurrence of cases of continued fever in persons who have been previously inoculated. For it is to be kept in view that Widal's reaction, when it is obtained in a person who has been previously inoculated, does not in any way confirm the diagnosis of typhoid, which may have been arrived at by ordinary clinical methods. Much less does it conclusively prove the correctness of such diagnosis.

In view of the difficulty which will therefore often arise in connection with the recognition of typhoid in inoculated persons, it is manifest that the effect of the anti-typhoid inoculations will be more accurately gauged by the reduction of the actual typhoid mortality, than by the reduction of the number of presumed cases of typhoid fever.

XII.—METHOD OF OBTAINING THE ANTI-TYPHOID VACCINE.

Applications for anti-typhoid vaccine may be addressed to the undersigned.

A. E. WRIGHT, M.D.,

Professor of Pathology,

Army Medical School, Netley.

PATHOLOGICAL LABORATORY, NETLEY.

January, 1901.

Memorandum on the steps specially requisite to be taken in places where Small-Pox is prevalent.

27

I.—BY BOARDS OF GUARDIANS.

As it is by vaccination that the spread of small-pox can most effectually be prevented, Boards of Guardians, as soon as any case of that disease is brought into or occurs in their respective unions or parishes, should see that measures are promptly taken to secure, as far as is necessary and practicable under the law relating to vaccination, the vaccination (or, as the case may be, re-vaccination) of all such persons as are especially exposed to the danger of the infection.

Under sect. 7 of the Vaccination Act, 1898 (61 and 62 Vict. c. 49), the Local Government Board may by Order, if in their opinion it is expedient by reason of serious risk of outbreak of small-pox, or of other exceptional circumstances, require any Board of Guardians to provide vaccination stations for the vaccination of children with glycerinated calf lymph, or such other lymph as may be issued by the Board, and modify as respects the area to which the Order applies, and during the period for which it is in force, the provisions of that Act requiring the public vaccinator to visit the home of the child, otherwise than on request of the parent; and it will be for Boards of Guardians to make application to the Local Government Board for the issue of such an Order whenever local circumstances appear to them to demand the exercise of the power conferred on the Board by the section in question. It is also provided under sect. 13 of the Vaccination Act, 1871 (34 and 35 Vict. c. 98), that District Medical Officers in attendance upon any person suffering from small-pox shall be entitled to payment from the Guardians for vaccinating or (as the case may be) re-vaccinating any person who is resident in the same house as the sick person, and who could lawfully be vaccinated or (as the case may be) re-vaccinated by a Public Vaccinator at the public expense.

These provisions, promptly applied in the event of serious risk of an outbreak of small-pox, will in general be found adequate to stop the spread of the disease; but if from neglect of them, or from any other circumstance, cases of small-pox spread in the district, special measures should be taken to expedite, as far as practicable, the vaccination of all unvaccinated persons in the district and to promote the re-vaccination of adults and adolescents who have not already been successfully re-vaccinated.

In order that speedy discovery may be made of all unvaccinated persons, whether born in the district, or newly arrived there, it will frequently be desirable that some temporary assistance be given to Vaccination Officers, in the manner provided in Article 10 (2) of the Vaccination Order, 1898.

This Memorandum is intended to afford information on the measures and arrangements referred to above.

A.—SPECIAL INSTRUCTIONS TO VACCINATION OFFICERS.

1. On the occurrence of any prevalence of small-pox the Vaccination Officer should give his first and special attention to the particular localities in which the infection exists.

2. In order that for this purpose he may have the earliest possible information of the occurrence of cases of the disease, the Guardians should invite the Medical Officer of Health to give information to the Vaccination Officer of each case of small-pox as soon as it is notified, and, with the same object, the co-operation of persons who visit among the poor should be secured. They should also instruct their District Medical Officers to give the Vaccination Officer immediate notice of every fresh case of small-pox which comes under their

care, and arrange with the Registrars of Deaths to forward to him immediate notice of each death registered from small-pox. For convenience of transmitting such notices, each District Medical Officer and Registrar should be supplied with forms duly stamped for post, or with post-cards adapted for the purpose. Private medical practitioners may be invited to give similar information.

3. In each locality in which the infection exists, the Vaccination Officer should, with the utmost possible dispatch, personally ascertain what children are unprotected by vaccination, and should use his utmost exertions to obtain the prompt vaccination of all such children. Generally speaking, his own judgment and local knowledge will guide him as to the manner in which his inquiries can best be made; but in infected courts or alleys, as well as in certain kinds of streets, inquiries from house to house, and, in tenement houses, from room to room, will be indispensable.

4. Where any child (between the ages of six months and 14 years) who has not already had small-pox, or has not been duly certified as insusceptible of vaccination, or has not come within the terms of exemption under section 2 of the Vaccination Act, 1898, or whose vaccination is not at the time standing postponed under medical certificate, is found to be unvaccinated, the Vaccination Officer should take steps to procure the vaccination of the child with all practicable speed.

With regard to unvaccinated children, not yet six months old, who may be in infected localities, the Vaccination Officer should advise the parents not to incur the unnecessary risk of waiting for the child to reach that age before having its vaccination performed. In no house in which there is small-pox ought any child to remain unvaccinated, unless on medical examination it is pronounced unfit to be vaccinated.

5. All representations made as above should be accompanied with information as to the existing arrangements for vaccination, including any special temporary provisions which may have been made under section 7 of the Vaccination Act, 1898, for Public Vaccination in the district.

6. The Vaccination Officer should make it well known that the Public Vaccinator is at liberty to re-vaccinate all persons who shall not be less than ten years old and shall not have been previously re-vaccinated within a period of ten years, who apply to him for that purpose; and that persons not vaccinated since childhood, who are likely to be exposed to contagion, ought to be re-vaccinated without delay. Above all, this is necessary for persons whose original marks of vaccination are imperfect.

7. In the event of many artisans requiring re-vaccination, and being unwilling to lose part of their working day for the purpose of securing the desired protection, it may be expedient that the Vaccination Officer should confer with the Guardians as to attendances being given by the Public Vaccinator at some specified hour in the evening.

8. Generally, the Vaccination Officer should take every means to ensure that the vaccination of his whole district is as complete as possible. He should make frequent examination of his birth-lists; and deal, as soon as practicable, with every case of default as it arises; and he should be prompt and diligent in his inquiries respecting the other children to whom his duties extend under Section 7 of his "Instructions," as issued by the Local Government Board.

9. The Vaccination Officer should give immediate information to the local Sanitary Authority of any house in which small-pox has appeared, and of which no information has reached him from the Medical Officer of Health, in order that needful means of isolation and disinfection may be taken.

II.—BY SANITARY AUTHORITIES.

The Sanitary Authority of any district into which a case of small-pox may be brought, or in which it may occur, should immediately, on obtaining information of the occurrence, instruct their Medical Officer of Health to give notice to the Vaccination Officer of the Board of Guardians (the Local Authority for vaccination purposes), in order that all practicable measures in regard to vaccination may be taken. The Sanitary Authority should also instruct their officers to assist in the administration of the Vaccination Acts by spreading a knowledge of the advantages of vaccination and re-vaccination, and by giving to the Vaccination Officer any information they may obtain as to children and others unprotected by vaccination.

The Sanitary Authority themselves should, on any appearance of small-pox within their district, at once proceed (under the powers of the Public Health Act, 1875) to see that proper means to prevent the spread of the disease by ISOLATION OF THE SICK AND BY DISINFECTION OF INFECTED HOUSES AND THINGS, are adopted. Any extension of the disease from the house first infected, or any fresh importation of it, needs to be dealt with in the same way. And as, from the extreme infectiousness of small-pox, every new case is a fresh source of danger, it is of the first importance towards preventing the spread of the disease that the necessary measures of the kind above-mentioned should be taken in each case at the earliest possible moment. Hence it is important for every Sanitary Authority to see that their Medical Officer of Health is kept informed, as completely and promptly as possible, of all cases of small-pox occurring in the district. The knowledge thus obtained should be supplemented by information procured by house to house inquiry in each locality invaded as to cases of modified small-pox that may have escaped recognition or treatment, and by immediate notice from the District Registrars of all deaths from small-pox.

*In any district invaded by small-pox the Sanitary Authority will find especial advantage in possessing powers under the Infectious Disease (Prevention) Act, 1890.**

The following are the measures which Sanitary Authorities should take for the attainment of these objects:—

1. It is of great importance that all persons suffering from small-pox, and so lodged that the isolation of them from healthy persons cannot be secured without their removal, should be removed to some special hospital or place for the reception of the sick. The 124th Section of the Public Health Act, 1875, in the cases before mentioned, gives power to a Justice to order such removal†; and resort should be had to this provision wherever such a measure seems necessary to prevent the spread of the disease. Similar powers for the necessary detention in hospital of persons suffering from infectious disease, are obtainable under the 12th Section of the Infectious Disease (Prevention) Act, 1890. The 91st Section of the Public Health Act, 1875, including within

* This Act may be adopted at the option of Sanitary Authorities. But it is to be remembered that at least 14 clear days' notice of the proposed resolution to adopt the Act must be given to every member of the Authority: Also that the resolution adopting the Act must be locally advertised at least a month before it can come into force. It is important therefore that adoption of this Act be not deferred until infectious disease is actually epidemic in the district.

† In the case of *Warwick v. Graham* L.R. [1899] 2 Q.B. 191, where it was proved that a person suffering from a dangerous infectious disorder had proper lodging and accommodation, so far as he himself was concerned, at his father's house, but that he could not be properly isolated, and there would be danger of infection to the other inmates of the house if he remained there, it was held that there was evidence that he was "without proper lodging or accommodation" within the meaning of Section 124 of the Public Health Act, 1875, Mr. Justice Day remarking that the section referred to is clearly directed not only to the protection of the sick person himself but to the protection of other persons from infection.

the term "nuisance" such overcrowding of a house or any part of a house as is dangerous or injurious to the health of the inmates, should also receive the special attention of the Sanitary Authority wherever any infectious disease is or threatens to become prevalent in the district; and the powers given in the 142nd Section of the Act of 1875, as well as those obtainable under Sections 8, 9, and 10 of the above-named Act of 1890, should, if necessary, be exercised with regard to the bodies of persons who die of small-pox.

2. If it be doubtful whether suitable accommodation will be found in existing hospitals for the cases of small-pox in the district which ought to be removed from their homes, the Sanitary Authority, who (under Section 131 of the Public Health Act) have power to provide any requisite accommodation for such cases, should bear in mind that small-pox hospitals, as we know them, are apt to disseminate small-pox, and that their sites, therefore, should be placed outside of towns, and should indeed be sought at places as far distant from any populated neighbourhood as considerations of accessibility permit.

3. It is equally necessary that all houses or rooms and things infected with small-pox should be disinfected under skilled direction, and with as little delay as possible after the removal, convalescence, or death of the patient, and for this provision is made in Section 120 of the Public Health Act, 1875, and more fully in Sections 5, 6, and 7 of the Infectious Disease (Prevention) Act, 1890. To secure the disinfection of houses or rooms being properly performed it will be desirable that it should, in as many cases as possible, be done by the servants of the Sanitary Authority, and to the satisfaction of the Medical Officer of Health. Under the 15th Section of the Infectious Disease (Prevention) Act, 1890, temporary shelter or house accommodation may be provided for the members of any family in which infectious disease has appeared, and who are compelled to leave their dwellings for the purpose of enabling such dwellings to be disinfected by the Sanitary Authority. In order that infected articles and things may be readily but sufficiently disinfected, it will be necessary that a place with the requisite apparatus and attendance for disinfection (preferably by steam) be ready for use (Public Health Act, 1875, Section 122). If these public means of disinfecting infected articles and things have not already been provided, this should at once be done. Often it will be better, instead of disinfecting infected articles (such as bedding and clothing), to destroy them; and the Sanitary Authority have power, under Section 121 of the Public Health Act, 1875, to do this, and to make compensation for the articles destroyed.

4. As infectious diseases may be spread by the use of public carriages for the conveyance of the sick and of convalescents, the Sanitary Authority should (under Section 123 of the Public Health Act, 1875) provide suitable means of conveyance to and from hospital of persons suffering or recovering from small-pox.

5. The Sanitary Authority should also bear in mind their powers as to dealing with infectious diseases in any tent, van, shed, or similar structure, under Section 9 of the Housing of the Working Classes Act, 1885.

6. Public notice should be given of the penalties to which persons are liable on account of the exposure of small-pox patients, the use without proper precautions of public carriages for the conveyance of persons suffering from small-pox or of the bodies of those who have died therefrom, the letting of infected houses or rooms, the sale or sending about of infected things, or the throwing into ash-pits of infectious rubbish; and proceedings should be taken by the Sanitary Authority in every case in which these provisions are disobeyed. (See Public Health Act, 1875, Sections 126-129, and Sections 7, 11, and 13, Infectious Disease (Prevention) Act, 1890.)

W. H. POWER,

Medical Officer.

*Local Government Board,
March, 1901.*

28

SUPPLEMENT
FOR THE
PUBLIC HEALTH

SHIP-BORNE RATS AND PLAGUE.

In view of the susceptibility of the rat to Plague, and of risk therefore of importation into this country by shipping of plague-infected rats, Sanitary Authorities of seaports should be on the alert to prevent introduction of the disease into their districts in this way.

1. On the arrival in port of a vessel whereon, during the voyage, Plague or sickness suspected to be Plague has occurred, measures should be taken to secure the destruction of the rats on board the vessel. Until this has been done, endeavour should be made to prevent rats leaving the ship, by mooring the vessel a sufficient distance from other ships and from the shore, and by placing guards on cables and hawsers in use for mooring purposes.

2. In the case of vessels that have come from places infected with Plague, but on board of which no Plague or suspected Plague has occurred, strict inquiry should be made on their arrival in port as to mortality or sickness among rats during the voyage. Should this have occurred, the Authority would do well to obtain the body of a sick rat for the purpose of ascertaining the nature of the malady affecting those animals on board the vessel. In the event of the malady being found to be Plague, the ship should be dealt with as under Paragraph 1.

3. Exceptional sickness or mortality among rats on board any vessel within the district, whatever may have been her port of departure, should be viewed with suspicion and as giving occasion for action similar to that indicated under Paragraph 2.

4. Rats when destroyed on shipboard should not be handled : they should be at once cremated.

5. In the event of rats on board any ship being found to be infected with Plague, all parts of the vessel frequented by those animals should, as far as possible, be disinfected.

6. The Authorities of seaport towns invaded by Plague should endeavour to secure the destruction of the rats of the town, not least those inhabiting the docks and quayside warehouses. Measures should be taken to guard against shore-rats making their way on board vessels lying in the port, and attempt made to destroy all rats on board ships about to proceed on their voyage. Captains of such vessels should be urged to take steps during the ensuing voyage for the destruction of rats that may have remained alive on board their vessels notwithstanding the action of the Local Authority.

W. H. POWER,
Medical Officer.

Local Government Board,
Medical Department,
April, 1901.

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THE UNIVERSITY OF CHICAGO

DEPARTMENT OF THE HISTORY OF ARTS

SHIP-BORNE RATS AND PLAGUE.

LOCAL GOVERNMENT BOARD,

WHITEHALL, S.W..

29th April, 1901.

SIR,

I AM directed by the Local Government Board to advert to their circular letter of 9th October, 1900, enclosing copies of Memoranda prepared by their Medical Officer for the assistance of Sanitary Authorities and their officers in view of the possibility of the occurrence of cases of Plague in this Country. In the "Plague Memorandum" attention was specially drawn to the facts that plague affects rats as well as the human subject, and that the rat and man are as regards plague reciprocally infective.

I am now to forward to the Sanitary Authority the enclosed copies of a further Memorandum which has been prepared by the Board's Medical Officer with regard to the risk of importing plague into this country by means of plague-infected rats on board ships, and the steps which should be taken by Sanitary Authorities of seaports with the view of preventing the introduction of the disease in this way; and I am to request that the Sanitary Authority will instruct their officers to use their best efforts to secure the carrying into effect of the suggestions which this Memorandum contains.

A copy of the Memorandum should be given to the Medical Officer of Health and another to the Inspector of Nuisances.

I am, Sir,

Your obedient Servant,

S. B. Provis.

Secretary.

The Clerk to the Sanitary Authority.



29

THE ISOLATION HOSPITALS ACT, 1901.

Local Government Board,

Whitehall, S.W.,

6th September, 1901.

SIR,

I AM directed by the Local Government Board to draw attention to the Isolation Hospitals Act, 1901 (1 Edw. 7, c. 8), which has recently received the Royal Assent and which has for its object the amendment in various particulars of the Isolation Hospitals Act, 1893 (56 & 57 Vict. c. 68).

Transfer by Local Authority of Hospitals for use as Isolation Hospitals.

Urban and rural district councils are enabled by the Public Health Act, 1875 (38 & 39 Vict. c. 55) to provide hospitals for their districts. Moreover, under the provisions of the same statute, districts can be combined for hospital purposes by means of Provisional Orders made by the Local Government Board and confirmed by Parliament, and where this course is adopted, the hospital is provided by a joint board constituted in accordance with the Act.

Hitherto there has been some doubt as to the extent of the power of a district council or joint board, who had provided a hospital under the Public Health Act, 1875, to transfer their hospital to the county council. Section 1 (1) of the new Act provides that any local authority (including a joint board) within the meaning of the Public Health Act, 1875, who have provided under that Act, or any local Act, a hospital for the reception of the sick, may, with the sanction of the Local Government Board, and with the consent of the council, transfer it to the council of the county within which the hospital, or any part of the district of the authority, is situate.

The Board may give their sanction to the transfer subject to such terms and conditions as they think fit, but their sanction is not to be given unless they are satisfied that hospital accommodation sufficient for the needs of the district has been or will be provided. (Section 1 (2).)

Any money paid to a local authority on a transfer of a hospital thus effected is to be applied as the Board direct, either in repayment of any loan of the local authority, or for any other purpose for which capital moneys may properly be applied. (Section 1 (3).)

Any hospital transferred in accordance with these provisions must be appropriated to a district formed under the Isolation Hospitals Act, 1893, and may be adapted as an isolation hospital, and any hospital so appropriated is to be treated as if it had been originally established under that Act for the district. (Section 1 (4).)

It is further provided that the expenses incurred by a county council in or incidental to the transfer of any hospital under the new Act are to be defrayed as structural expenses incurred by a hospital committee within the meaning of section 17 of the Isolation Hospitals Act, 1893. (Section 1 (5).)

Contribution by County Councils to Hospitals provided by Local Authorities.

Section 21 of the Isolation Hospitals Act, 1893, empowers a county council to contribute out of the county rate capital or annual sums towards the structural or establishment expenses of isolation hospitals established under that Act, where they deem it expedient for the benefit of the county so to do ; but hitherto no such contribution could be made in respect of a hospital provided under the Public Health Act, 1875.

The new Act, however, now declares that the power conferred on a county council by section 21 of the Act of 1893 includes the power to contribute, in manner provided by that section, to any hospital provided by a local authority (including a joint board) within the meaning of the Public Health Act, 1875, for the reception of patients suffering from infectious disease, whether within the area of the county council or not. But the consent of the Board is required to an annual contribution under this provision by the county council to a hospital, the cost of providing which, or of any permanent extension or enlargement of which, has been defrayed otherwise than out of borrowed money. (Section 2 (1).)

Section 22 of the Act of 1893 enables a county council to borrow money for the purposes of that Act, but requires that the money shall be repaid to the county council out of the local rate of the district concerned. This requirement has presented a difficulty in the way of money being borrowed for the purpose of a contribution by a county council towards the expense of an isolation hospital, as the locality intended to be benefited would have to repay the loan.

For the future, a county council will, by virtue of subsection (2) of section 2 of the new measure, be specifically enabled to borrow in manner provided by section 22 of the Act of 1893 any sum required for the contribution of a capital sum under section 21 of that Act, as amended by the new Act, and sums so borrowed will not be repayable to the county council out of the local rate.

Power of Hospital Committees under the Isolation Hospitals Act, 1893, to contract for Hospital Accommodation.

Difficulties have been experienced by hospital committees under the Act of 1893 in hiring temporarily a hospital from a district council whilst the committee were themselves erecting a permanent hospital, and also owing to the want of power on the part of a hospital committee to send patients from their district to the hospitals of other authorities, and pay for them when the circumstances render this desirable, for example, in the case of an epidemic where the committee's hospital is full.

These difficulties are met by section 3 (1) of the new Act, which empowers the hospital committee of any hospital district under the Isolation Hospitals Act, 1893, to make and give effect to agreements for the use of any hospital or

part of a hospital, or for the reception into any hospital of the sick of their district, upon payment of such annual or other sums as may be agreed upon.

Subsection (2) of the same section provides that any expenses incurred by a hospital committee in this manner are to be defrayed under the Act of 1893 as structural, establishment, or patients' expenses, in such proportions as the committee direct.

Rate of Interest on Monies repayable to County Councils.

Hitherto monies borrowed by a county council, or expended by them for the purposes of the Act of 1893, have had to be repaid to them out of the local rate, with interest at a fixed rate of 4 per cent. per annum.

The provision in regard to the rate of interest is now repealed, and in lieu it is provided that the rate of interest shall be such as may be agreed upon between the county council and the hospital committee concerned, or, in default of agreement, may be determined by the Board. (Section 4.)

Appeals to Board as to formation of Hospital Districts.

The Act of 1893 empowers a county council to make an order constituting a hospital district, but under section 8 (3) of the Act any local authority in the proposed district who objects to the formation of such a district, or to the addition to, or abstraction from, such a district of any local area over which they have jurisdiction, may appeal to the Board, and the decision of the Board is final.

Some doubt has been felt whether, upon an appeal under these provisions, the Board could confirm or disallow the order of the county council, or whether they could modify it.

This doubt is set at rest by section 5 of the new Act, which provides that on any appeal against any order including any area in a hospital district under subsection (3) of section 8 of the Isolation Hospitals Act, 1893, the Board may by their decision confirm, disallow, or modify the order as they think fit.

Local Authorities in Rural Districts.

Where a rural district is included in a hospital district under the Act of 1893, the rural district council are the local authority for the purposes of the Act, but where a parish in a rural district is so included, the parish council or parish meeting have hitherto been the local authority. Section 26 of that Act provides that the local rate out of which the expenses are to be paid shall be the rate out of which the expenses incurred in the execution of the Acts relating to public health are directed to be paid, and that in the case of a contributory place the expenses shall be deemed to be special expenses. Parish councils and parish meetings, however, do not raise the rate out of which special expenses under the Public Health Acts are paid, and questions have arisen as to the payment of the expenses under the Act of 1893 where a contributory place consisting of a parish was concerned.

Section 6 (1) of the new Act now provides that the rural district council shall, to the exclusion of any other authority, be the local authority in the case of any contributory place. At the same time, in order to preserve the right of appeal, which a parish council possess as a local authority, against the formation of a proposed hospital district under section 8 (3) of the Act of 1893, it is provided that the parish council shall have the same right of appeal to the Board under that subsection as a local authority.

It is further provided that any liability which immediately before the passing of the present Act attached to the local authority in respect of a contributory place, being a parish, shall be transferred to and discharged by the rural district council. (Section 6 (2).)

Copies of Orders under section 9 of the Act of 1893 to be sent to Board.

As the council are aware they are required by section 9 of the Act of 1893, upon the conclusion of a local inquiry by them as to the necessity for the establishment of an isolation hospital, to make an order either dismissing the petition for the establishment of such a hospital, or constituting a hospital district and directing an isolation hospital for such district to be established.

The new Act requires that the council shall, as soon as may be, send to the Board a copy of any order so made by them. (Section 7.)

Representation of County Councils on Hospital Committees.

Section 10 of the Act of 1893 provides for the constitution of hospital committees in hospital districts formed under the Act. These committees may consist wholly of members of the county council, or partly of members of the county council and partly of representatives of the local area or areas in the district, or wholly of such local representatives.

Thus, hitherto, a county council could only be represented upon a hospital committee by members of their own body.

This is altered by section 8 of the new Act, under the operation of which the representatives of the county council upon a hospital committee may be members of the council or not.

I am, Sir,

Your obedient Servant,

L. B. Provis.

Secretary.

The Clerk of the
County Council.

Councils of Metropolitan and other
Boroughs, and of Urban and
Rural Districts.

TUBERCULOSIS.

Local Government Board,
Whitehall, S.W.,
6th September, 1901.

SIR,

I AM directed by the Local Government Board to state that at the recent Congress on Tuberculosis Professor Koch called in question the correctness of the opinion that tuberculosis can be transmitted from animals to man. The views expressed by Professor Koch on this subject have not received the general assent of scientific men ; but, having regard to the great importance of the matter, His Majesty's Government have thought it right to accede to a request made by the Congress that there should be an inquiry with respect to it. A Royal Commission has accordingly been appointed to inquire and report whether tuberculosis in animals and man is one and the same disease ; whether animals and man can be reciprocally infected with it ; under what conditions, if at all, the transmission of the disease from animals to man takes place ; and what are the circumstances favourable or unfavourable to such transmission.

The Board are desirous, however, of impressing upon the local authorities concerned that pending the investigations and report of the Royal Commission there should be no relaxation on their part or on that of their officers in the taking of proper measures for dealing with milk from tuberculous cows and with tuberculous meat which may be intended for the food of man. It is, in the opinion of the Board, of much importance that these measures should continue to be taken, and they rely on this being done.

At the same time the Board may observe that representations have been made to them to the effect that the action of the officers of local authorities in the seizing of tuberculous meat is not uniform. The Royal Commission on Tuberculosis, in the report which they made in 1898, referred to the degree of tubercular disease which should cause a carcass, or part thereof, to be seized. They stated as follows :—

“ We are of opinion that the following principles should be observed in the inspection of tuberculous carcasses of cattle :—

- | | |
|---|--|
| (a.) When there is miliary tuberculosis of both
lungs | } The entire carcass
and all the organs
may be seized. |
| (b.) When tuberculous lesions are present on
the pleura and peritoneum | |

- | | | |
|--|---|--|
| <p>(c.) When tuberculous lesions are present in the muscular system, or in the lymphatic glands embedded in or between the muscles</p> <p>(d.) When tuberculous lesions exist in any part of an emaciated carcase</p> | } | <p>The entire carcase and all the organs may be seized.</p> |
| <p>(a.) When the lesions are confined to the lungs and the thoracic lymphatic glands ...</p> <p>(b.) When the lesions are confined to the liver</p> <p>(c.) When the lesions are confined to the pharyngeal lymphatic glands</p> <p>(d.) When the lesions are confined to any combination of the foregoing, but are collectively small in extent</p> | } | <p>The carcase, if otherwise healthy, shall not be condemned, but every part of it containing tuberculous lesions shall be seized.</p> |

“In view of the greater tendency to generalisation of tuberculosis in the pig, we consider that the presence of tubercular deposit in any degree should involve seizure of the whole carcase and of the organs.

“In respect of foreign dead meat, seizure shall ensue in every case where the pleura have been ‘stripped.’”

The Board drew attention to this matter in the circular letters which they addressed to the Councils of Boroughs and Urban and Rural Districts on the 11th March, 1899, and they desire again to refer to it and strongly to urge upon the Council to direct those of their officers who are employed as Meat Inspectors to act in accordance with the principles laid down by the Royal Commission.

It is also of much importance that a person who is to act as a Meat Inspector should possess proper qualifications for the office. He should, as was pointed out by the Royal Commission, be acquainted with—

- (a.) The law of meat inspection.
- (b.) The names and situations of the organs of the body.
- (c.) Signs of health and disease in animals destined for food, both when alive and after slaughter.
- (d.) The appearance and character of fresh meat, organs, fat and blood, and the conditions rendering them, or preparations from them, fit or unfit for human food.

The Board trust that in making appointments of officers on whom will devolve the duty of acting as Meat Inspectors, the Council will satisfy themselves that the person appointed possesses adequate knowledge on these subjects.

The Board may at the same time draw attention to Article 19 (7) of their General Order of the 23rd March, 1891, with respect to the duties of an

Inspector of Nuisances in relation to the inspection and seizure of meat. There is a similar provision in Article 19 (6) of the Order in force in London, viz., the Sanitary Officers (London) Order, 1891.

Any Inspector of Nuisances or Sanitary Inspector to whom either of these Orders applies is required in any case of doubt in connection with the inspection and seizure of meat to report the matter to the Medical Officer of Health, with the view of obtaining his advice thereon. The Board think it desirable that any such Inspector of Nuisances or Sanitary Inspector should be reminded of his duty in this respect.

I am,

Sir.

Your obedient Servant,

L. B. Provis

Secretary.

The Town Clerk, *or*

The Clerk to the Urban *or*
Rural District Council.



(31)

VACCINATION ACTS, 1867 TO 1898.

Local Government Board,
Whitehall, S.W.,
17th September, 1901.

The Local Government Board to state that they have
the Law Officers of the Crown upon certain questions
arising under the Vaccination Acts 1867 to 1898, more
particularly with proceedings taken with a view to procuring an
order for the vaccination of a child under the provisions of section 31 of the

It is desirable that boards of guardians should be informed
of the advice of the Law Officers, the Board entertain
no objection to the order hereafter mentioned.

When an application is made to justices for an Order for the
vaccination of a child under section 31 of the Act of 1867, an objection is taken
on any ground which may be antagonistic to the views
of the justices and the justices seem inclined to dismiss the summons
and the justices should be made aware of
the fact that the opinion is based on the
subject, and of the fact that the opinion is based on the

Procedure under section 31 of the Act of 1867 for an Order for a child's Vaccination.

As the foundation for proceedings under section 31 of the Act of 1867, it is necessary that an information in writing should be given to a justice stating (1) that the child with reference to whom the proceedings are taken has not been, or that the Vaccination Officer has reason to believe that it has not been, successfully vaccinated; (2) that the Vaccination Officer has given to the parent, or person having the custody of the child, notice to procure its being vaccinated; and (3) that this notice has been disregarded. Care should of course be taken by the Vaccination Officer to see before laying any information that the child is still alive, that he has not received in respect of the child a valid certificate of insusceptibility, or of conscientious objection on the part of the child's parent, and that he has not received a valid certificate postponing the child's vaccination. Upon this information the justice may issue a summons to the parent or other custodian of the child, but upon the hearing of the summons the question to be determined is whether the child has or has not been vaccinated, or has already had the small-pox.

Irrelevancy of section 1 (3) of the Vaccination Act, 1898, to proceedings under section 31 of the Act of 1867.

The provisions of section 1 (3) of the Vaccination Act, 1898, have no relevancy to proceedings under section 31 of the Act of 1867. Consequently, upon the hearing of the summons under the last-mentioned enactment for an order for the vaccination of a child, it will not be requisite for the prosecutor to prove, as part of his case, either that the Public Vaccinator of the district gave notice of his intention to visit the home of the child in order to vaccinate it, or that he did in fact visit the child's home and offer to vaccinate it.

Irrelevancy of Notice to procure a child's Vaccination upon hearing of a summons for an Order for Vaccination.

Nor is it necessary upon the hearing of such a summons as above referred to, that the prosecutor should, in the first instance, prove as part of his case, that a notice to procure the child's vaccination as mentioned in section 31 of the Act of 1867 was in fact given, and strictly speaking no point in regard to this notice can properly be raised.

Proof of service and contents of Notice mentioned in section 31 of the Act of 1867, if required by Justices.

In case, however, the justices before whom the summons is heard, hold, in disregard of the opinion expressed in the last preceding paragraph, that it is incumbent upon the prosecutor, either as part of his original case or by way of reply to a defence that may be raised touching this matter, to prove that a notice to procure the child's vaccination was given to the defendant, or to prove the contents of such a notice, the following points should be borne in mind:—

- (a.) The service of such a notice will be *primâ facie* established by showing that it was sent to the defendant properly addressed, prepaid, and posted.

(b.) It is not essential, in order to prove the contents of such a notice, either to give notice to the defendant to produce the actual notice that was given, or to put in evidence an exact or duplicate copy of it.

(c.) The contents of such a notice may be sufficiently proved by verbal evidence.

Advisability of keeping accurate counterfoil of Notice under section 31 of the Act of 1867.

It will, at the same time, be desirable in order that there may be no doubt as to the exact terms of the notice in question, that the Vaccination Officer should, when using for the purposes of section 31 of the Act of 1867, one of the printed forms of notice to procure the vaccination of a child with which he has been furnished, either

(1) Fill in upon the counterfoil annexed to the form an accurate copy of the particulars filled in upon the form itself, so that the counterfoil shall, in fact, contain a duplicate of the notice served ;

Or (2) make a duplicate with carbon paper on the form now supplied for this purpose by the Local Government Board.

This counterfoil or duplicate should be available at the hearing, and may be referred to by the Vaccination Officer for the purpose of establishing the contents of the notice actually given.

The Board request that a copy of this circular may be given to each Vaccination Officer in the Poor Law Union. Copies are enclosed for this purpose.

I am, Sir,

Your obedient Servant,

L. B. Provis.

Secretary.

The Clerk to the Guardians.

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1901.

LOCAL GOVERNMENT BOARD,
WHITEHALL, S.W.,
25th September, 1901.

SIR,

Referring to the increase of Small-pox in the Metropolis within the last few weeks, and to the probability that the outbreak which has set in may become serious, the Local Government Board are desirous that the attention of the several Metropolitan Boards of Guardians should be at once specially given to the state of vaccination in their respective unions and parishes, with a view to the prompt vaccination of all children or other persons who may not yet have been vaccinated, and to the promotion of re-vaccination amongst adolescents and adults.

With regard to the vaccination of children, it appears to the Board of pressing importance that the inquiries which the Vaccination Officers are required by their Instructions to make on the Birth Lists in each case of default in vaccination should be duly and punctually made.

The Board regret to state that in many of the Metropolitan unions and parishes this has not been the case ; and that in the Metropolis generally there are very many children who are unprotected by vaccination.

In this connection I am to draw the attention of the Guardians to Article 28 of the Vaccination Order, 1898, under which they are required from time to time to ascertain whether the Vaccination Officer is performing the duties imposed on him by the Vaccination Acts, 1867 to 1898, of enforcing the provisions of those Acts, and the duties imposed upon him by the Order ; to require the due performance by him of such duties ; and, in case of any continued neglect on his part, to report the same to the Local Government Board.

The Board trust, therefore, that the Guardians will see that their Vaccination Officers immediately take such steps as may be necessary to deal effectively with the arrears which may have accumulated in the union or parish, and to ensure that in all further cases of default the measures required by the Vaccination Order, 1898, are promptly taken.

In the course of the visits which the Vaccination Officers, in the execution of the duty above referred to, have to make, they should now be more than usually diligent in ascertaining, from all available sources of information, whether there are residing in the several localities any other children than those whose names are in their birth lists who are not vaccinated, and they should lose no time in taking the requisite steps to obtain as far as possible the vaccination of such children.

Small-pox Mem.

The small-pox, during the present outbreak, has as yet severely affected only a few localities, but the experience of former outbreaks shows that it may speedily be imported into others, until it becomes generally diffused. The extent of mischief, however, which it may do in any locality into which it is imported will, so far as the Guardians are concerned, mainly depend (1) on the extent to which the inhabitants of the locality are already protected by vaccination, and (as regards adolescents and adults) by re-vaccination ; and (2) on the promptitude of the measures taken, immediately upon the importation of the disease, to secure the vaccination or re-vaccination of any who may be unprotected.

The Vaccination Officer, therefore, on learning of such importation, should immediately make inquiries (if need be from house to house) as to vaccination throughout the locality ; and he should, besides his express duty of seeing that all children illegally unvaccinated are vaccinated as soon as possible, impress on parents of unvaccinated children the extreme danger, under the circumstances, of delaying the vaccination, and represent, as far as he has opportunity, to adolescents and adults who have not been successfully re-vaccinated within the last ten years, the importance of re-vaccination.

It is desirable that arrangements should be made with the Medical Officers of Health and District Medical Officers, whereby the Vaccination Officer may be informed of any outbreak of small-pox which may occur within their respective districts, and that medical practitioners generally should be invited to give him similar information.

The Board are well aware that in some unions and parishes assistance will be required by the Public Vaccinators and Vaccination Officers to enable these measures to be carried out with the promptitude which is requisite ; and the Board will give their immediate attention to any proposal which the Guardians, on reviewing the circumstances of their union or parish, may think it necessary to make in this respect.

Copies of a memorandum on the steps which should be taken in localities where small-pox is prevalent are enclosed. A copy should be given to each Vaccination Officer.

I am, Sir,

Your obedient servant,

L. B. Provis.

Secretary.

To

The Clerk to the Guardians.

Memorandum on the steps specially requisite to be taken in places where Small-Pox is prevalent.

I.—BY BOARDS OF GUARDIANS.

As it is by vaccination that the spread of small-pox can most effectually be prevented, Boards of Guardians, as soon as any case of that disease is brought into or occurs in their respective unions or parishes, should see that measures are promptly taken to secure, as far as is necessary and practicable under the law relating to vaccination, the vaccination (or, as the case may be, re-vaccination) of all such persons as are especially exposed to the danger of the infection.

Under sect. 7 of the Vaccination Act, 1898 (61 and 62 Vict. c. 49), the Local Government Board may by Order, if in their opinion it is expedient by reason of serious risk of outbreak of small-pox, or of other exceptional circumstances, require any Board of Guardians to provide vaccination stations for the vaccination of children with glycerinated calf lymph, or such other lymph as may be issued by the Board, and modify as respects the area to which the Order applies, and during the period for which it is in force, the provisions of that Act requiring the public vaccinator to visit the home of the child, otherwise than on request of the parent; and it will be for Boards of Guardians to make application to the Local Government Board for the issue of such an Order whenever local circumstances appear to them to demand the exercise of the power conferred on the Board by the section in question. It is also provided under sect. 13 of the Vaccination Act, 1871 (34 and 35 Vict. c. 98), that District Medical Officers in attendance upon any person suffering from small-pox shall be entitled to payment from the Guardians for vaccinating or (as the case may be) re-vaccinating any person who is resident in the same house as the sick person, and who could lawfully be vaccinated or (as the case may be) re-vaccinated by a Public Vaccinator at the public expense.

These provisions, promptly applied in the event of serious risk of an outbreak of small-pox, will in general be found adequate to stop the spread of the disease; but if from neglect of them, or from any other circumstance, cases of small-pox spread in the district, special measures should be taken to expedite, as far as practicable, the vaccination of all unvaccinated persons in the district and to promote the re-vaccination of adults and adolescents who have not already been successfully re-vaccinated.

In order that speedy discovery may be made of all unvaccinated persons, whether born in the district, or newly arrived there, it will frequently be desirable that some temporary assistance be given to Vaccination Officers, in the manner provided in Article 10 (2) of the Vaccination Order, 1898.

This Memorandum is intended to afford information on the measures and arrangements referred to above.

A.—SPECIAL INSTRUCTIONS TO VACCINATION OFFICERS.

1. On the occurrence of any prevalence of small-pox the Vaccination Officer should give his first and special attention to the particular localities in which the infection exists.

2. In order that for this purpose he may have the earliest possible information of the occurrence of cases of the disease, the Guardians should invite the Medical Officer of Health to give information to the Vaccination Officer of each case of small-pox as soon as it is notified, and, with the same object, the co-operation of persons who visit among the poor should be secured. They

should also instruct their District Medical Officers to give the Vaccination Officer immediate notice of every fresh case of small-pox which comes under their care, and should arrange with the Registrars of Deaths to forward to him immediate notice of each death registered from small-pox. For convenience of transmitting such notices, each District Medical Officer and Registrar should be supplied with forms duly stamped for post, or with post-cards adapted for the purpose. Private medical practitioners may be invited to give similar information.

3. In each locality in which the infection exists, the Vaccination Officer should, with the utmost possible dispatch, personally ascertain what children are unprotected by vaccination, and should use his utmost exertions to obtain the prompt vaccination of all such children. Generally speaking, his own judgment and local knowledge will guide him as to the manner in which his inquiries can best be made; but in infected courts or alleys, as well as in certain kinds of streets, inquiries from house to house, and, in tenement houses, from room to room, will be indispensable.

4. Where any child (between the ages of six months and 14 years) who has not already had small-pox, or has not been duly certified as insusceptible of vaccination, or has not come within the terms of exemption under section 2 of the Vaccination Act, 1898, or whose vaccination is not at the time standing postponed under medical certificate, is found to be unvaccinated, the Vaccination Officer should take steps to procure the vaccination of the child with all practicable speed.

With regard to unvaccinated children, not yet six months old, who may be in infected localities, the Vaccination Officer should advise the parents not to incur the unnecessary risk of waiting for the child to reach that age before having its vaccination performed. In no house in which there is small-pox ought any child to remain unvaccinated, unless on medical examination it is pronounced unfit to be vaccinated.

5. All representations made as above should be accompanied with information as to the existing arrangements for vaccination, including any special temporary provisions which may have been made under section 7 of the Vaccination Act, 1898, for Public Vaccination in the district.

6. The Vaccination Officer should make it well known that the Public Vaccinator is at liberty to re-vaccinate all persons who shall not be less than ten years old and shall not have been previously re-vaccinated within a period of ten years, who apply to him for that purpose; and that persons not vaccinated since childhood, who are likely to be exposed to contagion, ought to be re-vaccinated without delay. Above all, this is necessary for persons whose original marks of vaccination are imperfect.

7. In the event of many artizans requiring re-vaccination, and being unwilling to lose part of their working day for the purpose of securing the desired protection, it may be expedient that the Vaccination Officer should confer with the Guardians as to attendances being given by the Public Vaccinator at some specified hour in the evening.

8. Generally, the Vaccination Officer should take every means to ensure that the vaccination of his whole district is as complete as possible. He should make frequent examination of his birth-lists; and deal, as soon as practicable, with every case of default as it arises; and he should be prompt and diligent in his inquiries respecting the other children to whom his duties extend under Section 7 of his "Instructions," as issued by the Local Government Board.

9. The Vaccination Officer should give immediate information to the local Sanitary Authority of any house in which small-pox has appeared, and of which no information has reached him from the Medical Officer of Health, in order that needful means of isolation and disinfection may be taken.

II.—BY SANITARY AUTHORITIES (LONDON).

The Sanitary Authority of any district into which a case of small-pox may be brought, or in which it may occur, should immediately, on obtaining information of the occurrence, instruct their Medical Officer of Health to give notice to the Vaccination Officer of the Board of Guardians (the Local Authority for vaccination purposes), in order that all practicable measures in regard to vaccination may be taken. The Sanitary Authority should also instruct their officers to assist in the administration of the Vaccination Acts by spreading a knowledge of the advantages of vaccination and re-vaccination, and by giving to the Vaccination Officer any information they may obtain as to children and others unprotected by vaccination.

*The Sanitary Authority themselves should, on any appearance of small-pox within their district, at once proceed (under the powers of the Public Health (London) Act, 1891) to see that proper means to prevent the spread of the disease by ISOLATION OF THE SICK AND BY DISINFECTION OF INFECTED HOUSES AND THINGS, are adopted. Any extension of the disease from the house first infected, or any fresh importation of it, needs to be dealt with in the same way. And as, from the extreme infectiousness of small-pox, every new case is a fresh source of danger, it is of the first importance towards preventing the spread of the disease that the necessary measures of the kind above-mentioned should be taken in each case at the earliest possible moment. Hence it is important for every Sanitary Authority to see that their Medical Officer of Health is kept informed, as completely and promptly as possible, of all cases of small-pox occurring in the district. The knowledge obtained through notifications received under Section 55, Public Health (London) Act, 1891, should be supplemented by information procured by house to house inquiry in each locality invaded as to cases of modified small-pox that may have escaped recognition or treatment, and by immediate notice from the District Registrars of all deaths from small-pox.**

The hospital treatment of small-pox cases in London under ordinary circumstances devolves upon the Metropolitan Asylums Managers, who, under Section 80, Public Health (London) Act, 1891, subject to such regulations and restrictions as the Local Government Board prescribe, may admit any person who is reasonably believed to be suffering from small-pox into a hospital provided by the Managers. The expenses incurred by them for the maintenance of any such person are to be paid by the Board of Guardians of the Poor Law Union from which he is received, but are repayable to the Board of Guardians out of the Metropolitan Common Poor Fund. The admission of a person suffering from an infectious disease into any hospital provided by the Metropolitan Asylums Managers, or his maintenance there, is not to be considered parochial relief, alms, or charitable allowance, and does not entail loss of any right or privilege, or involve any disability or disqualification.

The Metropolitan Asylums Managers are also empowered by Section 79 of the Act to provide ambulances for the removal of patients.

The following are the measures which Sanitary Authorities should take:—

1. It is of great importance that all persons suffering from small-pox, and so lodged that the isolation of them from healthy persons cannot be secured

* It must always be remembered that small-pox is liable to be spread by infection, not only from well-marked and easily recognised cases, but also, as indeed frequently happens, from cases of which the nature is not at first evident, especially to medical men unfamiliar with the disease. Such attacks may be, on the one hand, mild and modified cases, which may be mistaken for chicken-pox or other comparatively slight disorder; or, on the other hand, they may be hæmorrhagic or other malignant and rapidly fatal forms in which death may occur before the characteristic rash has had time to develop itself.

without their removal, should as speedily as possible be removed to some special hospital or place for the reception of the sick. Section 66 of the Public Health (London) Act, 1891, gives power to a Justice to order such removal*; and resort should be had to this provision wherever such a measure seems necessary to prevent the spread of the disease. Similar powers for the necessary detention in hospital of persons suffering from infectious disease are obtainable under Section 67 of the same Act. Section 2 of the Public Health (London) Act, 1891, including within the term "nuisance" such overcrowding of a house or any part of a house as is injurious or dangerous to the health of the inmates, whether or not members of the same family, should also receive the special attention of the Sanitary Authority with a view to the abatement of the nuisance under Sections 4 and 5 wherever any infectious disease is or threatens to become prevalent in the district. The powers given in Sections 72, 73, 74, and 89 of the same Act of 1891 should, if necessary, be exercised with regard to the bodies of persons who die of small-pox.

2. After the removal or death of a patient suffering from small-pox, it is desirable that the remaining inmates of the house, and other persons who are known to have come into contact with infection, should be kept under observation during a period of not less than 14 days, in order that, in the event of any of them contracting the disease, it may be recognized at an early stage, and thus prompt measures may be taken for preventing its further spread.

3. All houses or rooms and things infected with small-pox should be disinfected under skilled direction, and with as little delay as possible after the removal, convalescence, or death of the patient, and for this provision is made in Sections 59-65 of the Public Health (London) Act, 1891. To secure the disinfection of houses or rooms being properly performed it will be desirable that it should, in as many cases as possible, be done by the servants of the Sanitary Authority, and to the satisfaction of the Medical Officer of Health. Under Section 60 (4) of that Act, temporary shelter or house accommodation is to be provided for the members of any family in which infectious disease has appeared, and who are compelled to leave their dwellings for the purpose of enabling such dwellings to be disinfected by the Sanitary Authority. The Authority are also required by Section 59 to provide proper premises, with the requisite apparatus and attendance, for disinfection (preferably by steam) of articles (whether bedding, clothing, or other) which have become infected by any dangerous infectious disease. Often it will be better, instead of disinfecting infected articles (such as bedding and clothing), to destroy them; and the Sanitary Authority have power, under Sections 60 and 61 of the Public Health (London) Act, 1891, to do this, and to make compensation for the articles destroyed.

4. As infectious diseases may be spread by the use of public carriages for the conveyance of the sick, the Sanitary Authority should bear in mind the provisions of Section 70 of the Public Health (London) Act, 1891, and should provide suitable means of disinfecting public vehicles which may have been unwittingly or negligently used for the conveyance of persons suffering from small-pox.

5. The Sanitary Authority should also bear in mind their powers under Section 9 of the Housing of the Working Classes Act, 1885, as to dealing with infectious diseases in any tent, van, shed, or similar structure.

* In the case of *Warwick v. Graham* L.R. [1899] 2 Q.B. 191; 68 L.J. Q.B. 1001; 80 L.T. n.s. 773; 63 J.P. 599, where it was proved that a person suffering from a dangerous infectious disorder had proper lodging and accommodation, so far as he himself was concerned, at his father's house, but that he could not be properly isolated, and there would be danger of infection to the other inmates of the house if he remained there, it was held that there was evidence that he was "without proper lodging or accommodation" within the meaning of Section 124 of the Public Health Act, 1875 (corresponding to Section 66 of the Public Health (London) Act, 1891), Mr. Justice Day remarking that the section referred to is clearly directed not only to the protection of the sick person himself but to the protection of other persons from infection.

6. Public notice should be given of the penalties to which persons are liable on account of the exposure of small-pox patients, the use without proper precautions of public carriages for the conveyance of persons suffering from small-pox or of the bodies of those who have died therefrom, the letting of infected houses or rooms, the sale or sending about of infected things, or the throwing into ashpits of infectious rubbish ; and proceedings should be taken by the Sanitary Authority in every case in which the provisions with respect to the above matters are disobeyed. (*See* Public Health (London) Act, 1891, Sections 63-65, 68-70, and 74.)

W. H. POWER,

Medical Officer.

Local Government Board,
September, 1901.

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1901.

LOCAL GOVERNMENT BOARD.

Memorandum, prepared in the Medical Department, on the Circumstances under which the Closing of Public Elementary Schools or the Exclusion therefrom of particular Children may be required in order to prevent the Spread of Disease.

1. It is attempted in these notes to bring together the information in the possession of the Local Government Board, derived from the reports of the Board's own Medical Inspectors and of local Medical Officers of Health, respecting school-closure and exclusion from school as precautions against infection, with a view to indicate the best means of preventing the spread of disease by school children among their fellows, while avoiding any unnecessary interruption of the work of education. Objects of memorandum.

2. In the Code of Regulations approved by the Lords of the Committee of Council on Education, the following Article (Art. 88) prescribes, as one of the general conditions required to be fulfilled by a Public Elementary School in order to obtain an annual Parliamentary grant, that— Regulations of Education Department.

“The managers must at once comply with any notice of the sanitary authority of the district in which the school is situated, or any two members thereof acting on the advice of the Medical Officer of Health, requiring them for a specified time, with a view to preventing the spread of disease, or any danger to health likely to arise from the condition of the school, either to close the school, or to exclude any scholars from attendance, but after complying they may appeal to the Department if they consider the notice to be unreasonable.”

Article 83 (a) prescribes that “if a school has been closed during the year under “medical authority, or for any unavoidable cause, a corresponding reduction is made “from the number of meetings” (400 a year) required.

Article 101* provides that where the Education Department “are satisfied that by “reason of a notice of the Sanitary Authority under Art. 88, or any provision of an “Act of Parliament, requiring the exclusion of certain children, or by reason of the “exclusion under medical advice of children from infected houses, the average “attendance has been seriously diminished, and that consequently a loss of annual “grant would, but for this Article, be incurred, the Department have power to make “a special grant not exceeding the amount of such loss in addition to the ordinary “grant.”

3. The diseases for the prevention of which school closure, or the exclusion of particular children, will be required are principally those which spread by infection directly from person to person, such as diphtheria, scarlet fever, measles, whooping-cough, epidemic influenza, small-pox, and rōtheln. More rarely, the same questions arise in connexion with enteric fever and diarrhoeal diseases, which spread not so much by direct infection from person to person as indirectly through the agency of local conditions, such as infected school privies. Diseases principally requiring action.

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4. It will be seen that Article 88 quoted above confers upon sanitary authorities an alternative power with respect to public elementary schools.

(A.) To cause particular scholars to be for a specified time excluded from attendance, or

(B.) To require the school to be closed for a specified time.

Exclusion
of scholars :

5.—*A. First, as to exclusion from school of particular scholars.*—Here it will be convenient to consider the circumstances under which the requirements of the public health will be satisfied by the less severe measure of the exclusion from school of particular children.

(a.) It may be laid down as a universal principle that all children suffering from any dangerous infectious disorder (*i.e.*, of a nature dangerous to some of the persons attacked by it, however mild in other cases) should be excluded from school until there is reason to believe that they have ceased to be in an infectious condition (*see* section 126 of the Public Health Act, 1875).

from infected
houses,

(b.) Furthermore, as it is rarely possible to provide effectual separation of the sick from the healthy within the homes of children of the class attending public elementary schools, it must commonly be necessary that all children of an infected household should be excluded from school; first, because otherwise such children might attend school while suffering from the disease in a latent form, or at an unrecognized stage, and, secondly, because it is known that infection may attach itself to, and be conveyed by, the clothes of a person living in an infected atmosphere, even though the person himself remain unaffected. The same considerations will sometimes make it desirable to prohibit the attendance at school of all children from a particular street or hamlet.

from par-
ticular
localities.

In the case of infectious diseases involving little or no danger to life, such as mumps or skin diseases, school interests may be more particularly considered. In such case, however, it will usually be well for the Medical Officer of Health to advise the managers to prohibit the attendance of every child while in an infectious state.

Closing of
schools :

6.—*B. Secondly, as to the closing of schools.*—This, by more seriously interfering with the educational work of a district, is a much more grave step for a sanitary authority to take than to direct the exclusion of particular scholars. It is a measure that seldom ought to be enforced, except under circumstances involving imminent risk of an epidemic, nor even then as a matter of routine nor unless there be a clear prospect of preventing the propagation of disease such as could not be looked for from less comprehensive action.

when to be
required.

The mere fact that in an epidemic many of the sufferers are school children does not necessarily show that the disease was caught at school; but the school may with probability be regarded as spreading infection if in a large majority of households attacked the first case be a child attending school; and with still greater probability if a number of children living at a distance from one another, and with no circumstances in common, except that they attend the same school, should be simultaneously attacked, and if it can be ascertained that a child or teacher in an infectious state has actually been attending the school.

Duty of
Medical
Officer of
Health when
infectious
disease
occurs.

7. By Article 18 (6) of the Board's Order of 23rd March, 1891, the Medical Officer of Health on the occasion of an outbreak of dangerous infectious disease is to advise the persons competent to act as to the measures to be taken to prevent the extension of the disease. If, therefore, he finds that the children of infected households are attending school, he should send notice of the fact to the schoolmaster, and give such advice as appears to him to be necessary with regard to the exclusion of the children from school, and as to the time for which such exclusion should continue.

Where the number of children to be excluded is small, and the schoolmaster acts on the advice of the Medical Officer of Health, it may not be necessary to take formal action under Article 88 of the code; but where the number of children whom it is desirable to exclude from school is such as is likely seriously to diminish the average attendance, or where the advice of the Medical Officer of Health is not followed, and there is danger of the disease spreading by means of the school, notice for the exclusion of the

children in question should be made in accordance with the requirements of Article 88.

The attention of school attendance officers and of schoolmasters should also be drawn to the following considerations. Frequently they themselves will obtain the earliest information of the occurrence of infectious disease among scholars, and it is most desirable that such officer or master should without delay communicate the facts to the Medical Officer of Health. Absence of any child from school on the plea that it is suffering under one of the before-mentioned diseases, and absence of several children of one family from school at the same time, no matter what name be given to the complaint that keeps them at home, should be reported to the health officer. In practice it has been found that this notification of absentees has materially aided the local health officer in taking measures for the suppression of infectious disease, to the advantage alike of the district and of the school. Furthermore, schoolmasters may properly be asked to take note, especially when an epidemic threatens or is present, of symptoms occurring in any of their scholars that may indicate the commencement of disease, febrile in nature. Besides heat of skin, such symptoms are shivering, headache, and languor, especially if commencing suddenly, vomiting, rashes on the skin, and sore throat. When scarlet fever or diphtheria is about, every trace of sore throat should be looked upon as suspicious. In any case where such symptoms are observed, the safest course will be to exclude the child from school until assurance can be had that it may attend school without harm to itself or danger to other scholars.

Aid which schoolmasters and others can give.

8. As regards duration of exclusion from school of particular children, the time to be specified will vary in different diseases and different cases, and in this matter the sanitary authority will doubtless be guided by the advice of their Medical Officer of Health.

Exclusion of particular scholars : duration of.

Medical officers of health, having to specify a time during which any scholars are to be excluded from attendance at any school, should have regard as far as practicable to the circumstances of the particular scholars suffering from infectious disease or living in infected households. Not only the nature of the infection and the length of illness, but the environments of the individual as affecting the retention of infection will deserve consideration. The period of exclusion, for example, will need to be different according to the conditions of a patient's lodgment, according to the sufficiency of the separation that can be effected between a patient and excluded scholars, and according to the opportunities of effectual disinfection that can be afforded to the household. Thus a hard and fast rule, such as has been laid down in some districts where scarlatina has been present, that no child shall go to school from an infected house for three months after the disease has begun in that house, is not to be commended. It is indeed possible that under the circumstances of a particular household, a child convalescent from scarlatina or living in the same house with convalescents should not in the interests of other children be permitted to return to school until after so long a period as this ; but the same ought not to be assumed of all households in the district that may be invaded by scarlatina. The better plan would be for the sanitary authority to secure, during a shorter period, the exclusion of individual sick persons and their housemates from school ; and when that period is about to expire to cause fresh inquiry to be made as to the expediency of further exclusion, and, if found requisite in particular cases, to cause fresh notice to be given to the school managers.

Considerations which should determine period.

Period of exclusion may be prolonged by new notice.

9. In deciding whether an outbreak of infectious disease among children of school age may be best combated by closing the school, or whether it will suffice to exclude the children of infected households, the two most important points to be considered are :—

Whether exclusion or school closure to be preferred.

(a.) The completeness and promptness of the information received by the officers of the sanitary authority respecting the occurrence of infectious cases.

(b.) The opportunities which exist for intercourse between the children of different households elsewhere than at school.

When exclusion system to be preferred.

10. (a.) The more prompt and full the knowledge of cases of infectious disease that the sanitary authority are able to obtain, the better will be the prospect of checking such disease by keeping away from school the children of infected households, and the less will be the necessity for closing schools.* If the cases be few in number, and their origin known, the exclusion from school of the children of infected households will probably suffice, but this measure will fail where there are many undiscovered or unrecognized cases, or where the known centres of infection are very numerous.

When total closure of school preferable.

Commonly, the failure of carefully considered measures of exclusion to stay the spread of an epidemic which shows a special incidence upon school children, may be regarded as pointing to the continued attendance at school of children with the prevalent disease in a mild or unrecognized form, and a strong case will appear for the closing of schools.

If by reason of the absence or exclusion of a large number of children, the attendance at a school be greatly reduced, it may be found better to close it altogether. This is especially apt to occur in the case of epidemics of measles, a disease which is very infectious in the early stages, before the characteristic rash has appeared, and while the symptoms resemble those of a common cold.

Closure of schools:—

in rural districts,

11. (b.) The second material consideration, in deciding as to the desirability of closing schools during the prevalence of infectious disease, is the amount of opportunity for intercommunication between the members of different households elsewhere than at school. In sparsely populated rural districts, where the children of different households, or of separate hamlets rarely meet except at, or on their way to, the village school, the closing of the school is likely to be effectual in checking the spread of disease. It is less likely to be useful in a town or compact village (particularly where houses are sub-let and yards are in common), where the children of different households when not at school, spend their time in playing together, and often run in and out of each other's houses. But it must be remembered that children when at play out of doors are brought into much less close association with each other than when in school.

in populous localities,

In rural districts, where epidemic diseases are less frequently prevalent, school closing may be required as an exceptional measure to meet an exceptional state of things. As regards more populous places, it must not be forgotten, that if schools were to be closed whenever an infectious disease was prevalent, there are many places where schools would hardly ever be open.

for purposes of disinfection, &c.,

It will sometimes be necessary to close a school for a day or two to allow of the rectification of sanitary defects of a nature to extend disease, or in order that the school may be disinfected or purified. It has happened that infectious sickness in the master's family has forbidden the attendance of scholars. These more temporary and occasional closures of schools are contemplated in the Education Code, and are to be regarded as having a real importance of their own.

where many schools exist.

12. In places where there are several public elementary schools, if an outbreak of infectious disease be confined to the scholars of one particular school, it may be sufficient to close that school only. But where different schools have all appeared to aid in the spread of disease (though perhaps to an unequal extent) the sanitary authority may consider it advisable that all should be closed lest children in an infectious state who previously attended the schools that are closed, should be sent to others that might remain open.

Sunday and private schools.

It must be remembered that sanitary authorities have no power in respect of Sunday Schools, or other private schools: except in so far as these may contravene sect. 91 (5), sect. 126, or other provision of the Public Health Act, 1875; but it will often be expedient to invite the co-operation of managers of such schools in efforts for securing the public health. Experience shows that they are usually ready to defer to the representations of the authority responsible for the public health of the district.

* Information obtainable under the Infectious Disease (Notification) Act, 1889, will be specially useful in this direction.

13. The Medical Officer of Health has not power to order the closing of a school; his function in this respect is advisory only. Reports of Medical Officers of Health to sanitary authorities, advising the closure of a school or schools in any district, are to be treated ^{as} "special" reports within the meaning of the General Order of the Local Government Board of March 23rd, 1891, and copies of them are required by Art. 18 (15) and (16) of that Order to be sent to the Board, and to the County Council. These reports should state the grounds upon which the Medical Officer of Health advocates the closure of the school or schools in preference to the exclusion of particular scholars.

Duty of Medical Officer of Health as to reporting.

Grounds for action to be stated.

14. All notices of the sanitary authority for the closing of Public Elementary Schools should be addressed in writing to the Managers, and should state the grounds on which the closing is deemed necessary.

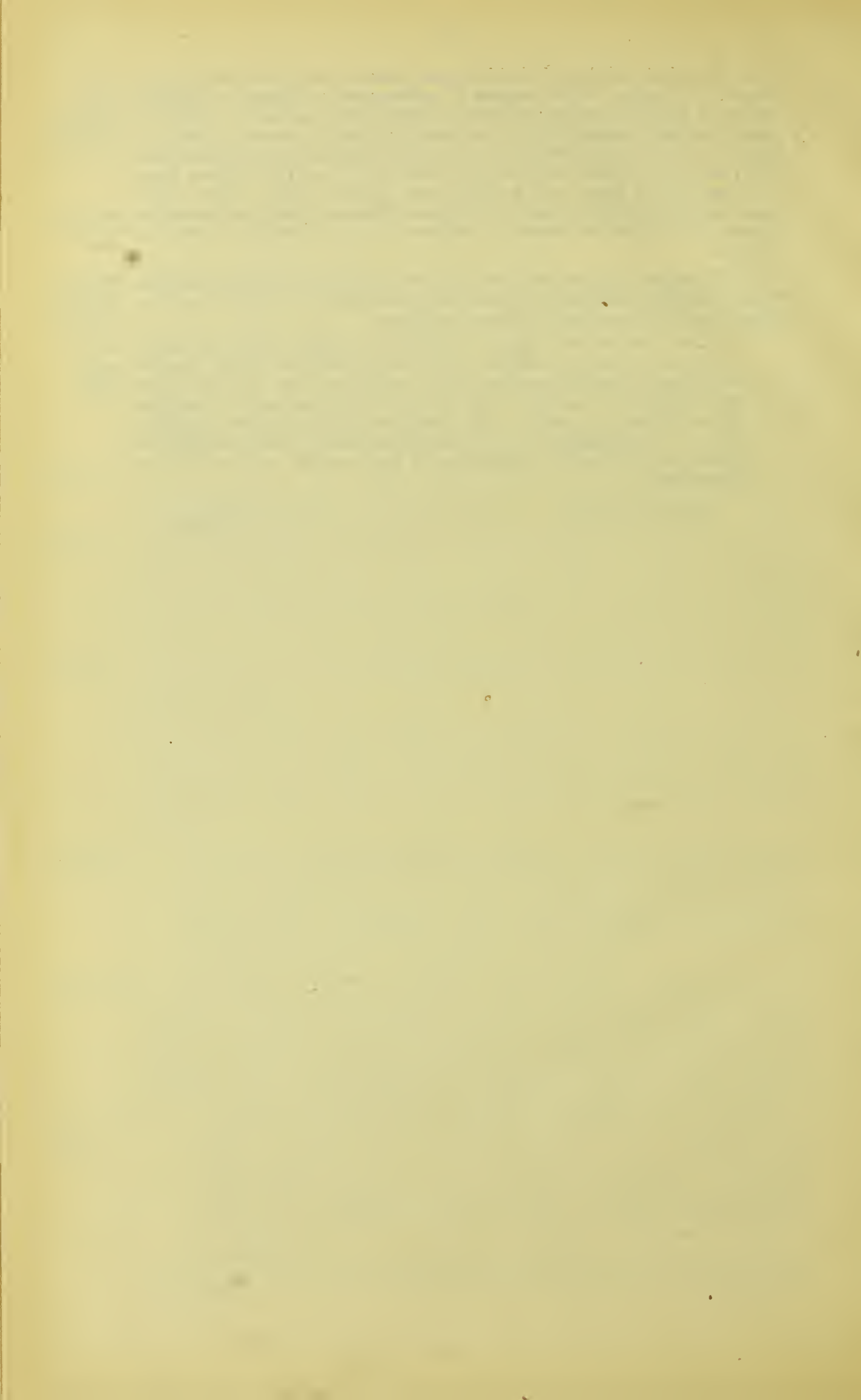
Notices requiring closure of schools.

All such notices shall specify a definite time during which the school is to remain closed; this should be as short a period as can be regarded as sufficing on sanitary grounds, since a second notice may be given before the expiration of the first, if it should be found necessary to postpone the re-opening of a school. The Managers of Schools, after complying with the requirements of the sanitary authority, have the right of appeal to the Education Department, if they consider any notice to be unreasonable.

Notices to specify definite periods

September, 1901.

W. H. POWER.



Circular.

Guardians.

Metropolis.

135

SMALL-POX IN CASUAL WARDS AND WORKHOUSES.

Local Government Board,

Whitehall, S.W.,

19th October, 1901.

SIR,

I AM directed by the Local Government Board to state that, in view of the outbreak of small-pox in London, they think it desirable to draw the attention of the Guardians to the circular letters addressed to them by the Board on the 21st February, 1893, and the 30th July, 1895.

In those letters the Board stated as follows :—

“There is no doubt that there is considerable risk of small-pox being spread by means of casual paupers, and the Board trust that the Guardians and their officers will take such measures as will tend as far as possible to diminish this danger.

“The regulations of the Board relative to the relief of casual paupers, which were issued on the 18th December, 1882, by Article 13 provide that in the event of any casual pauper being ill the Master of the Workhouse or the Superintendent of the Casual Wards shall, as soon as practicable, obtain the attendance of the Medical Officer, who shall give directions as to the treatment of such pauper. The Board consider it a matter of great importance that the attention of the Medical Officer should be at once called to any casual pauper who may complain of illness, or who, in the absence of complaint, may present any suspicious symptoms, and they request that the Guardians will be so good as to give such instructions to the Master of the Workhouse or Superintendent of the Casual Wards as will ensure that this shall be done, and that the greatest vigilance may be exercised to check the discharge of persons who are likely to be suffering from small-pox, or, being convalescent, may still be a source of danger to others. It appears to the Board that there would be considerable advantage if there were a systematic daily medical inspection of Casual Wards.

“The Board must, at the same time, observe that when a case of small-pox occurs, whether in the Casual Wards or in the Workhouse, and indeed in times of small-pox prevalence generally, it is, in the opinion of the Board, of the greatest importance that measures should without delay be taken to secure, as far as practicable, vaccination or re-vaccination of the other inmates, so far as the Medical Officer may consider needful. Care should especially be taken that the officers and other persons employed in the Casual Wards or brought into personal contact with a case of small-pox, if they have not within a sufficiently recent period been either successfully re-vaccinated or had small-pox, should at once be re-vaccinated as a protection against the disease.

“ The Board request that whenever there is an occurrence of small-pox or any other dangerous infectious disease in a Workhouse, including any case occurring in the Casual Wards, a report of the fact may be made to the Board by the Medical Officer, the report being accompanied by a statement showing for each case the date of attack and source of infection, so far as may be known.” This report should be made in addition to the immediate notification of the case to the Medical Officer of Health.

In their letter of the 30th July, 1895, the Board further expressed a desire that the Medical Officer would, in reporting any case of small-pox as requested above, state what provision had been made for preventing the spread of the disease among the inmates, and for the isolation and nursing of the patients whilst they remain under his charge. The Board wish that this desire should be complied with, and that, in the case of small-pox occurring, the Medical Officer should fully inform the Board of such measures as may be taken with regard to vaccination and re-vaccination.

I am directed to request that the Guardians will be good enough to place a copy of this circular in the hands of the Medical Officer, the Master of the Workhouse, and the Superintendent of the Casual Wards.

I am, SIR,

Your obedient Servant,

L. B. Provis.

Secretary.

The Clerk to the Guardians.

Circular.

Councils of Boroughs or other
Districts in Home Counties.

36

SMALL-POX HOSPITAL PROVISION.

LOCAL GOVERNMENT BOARD,
WHITEHALL, S.W.,
6th December, 1901.

SIR,

I AM directed by the Local Government Board to refer to the present outbreak of small-pox in London, and to state that, in view of the fact that some cases have also occurred in the neighbourhood of the Metropolis, they think it right to draw the attention of the Council to the necessity of their being prepared to deal with any cases which may occur in their district.

The Board understand that the Managers of the Metropolitan Asylums District have received communications from the Councils of some districts outside London with regard to the reception in the hospitals of the Managers of small-pox patients from those districts, but the Board must point out that it does not form part of the duty of the Managers to deal with such cases, and also that the demands upon them in respect of their own district would generally render it impracticable that they should do so.

In these circumstances it is clear that the Council must rely in this matter upon arrangements made by themselves, either alone or in conjunction with other Councils; and, looking to the extreme importance of the immediate isolation of small-pox cases where the disease appears, the Board would urge upon the Council to make forthwith such arrangements as may be necessary to provide hospital accommodation for the treatment of any cases occurring in their district, if they have not already done so.

I am directed to forward to the Council copies of a memorandum prepared by the Board's Medical Officer, with regard to the steps specially requisite to be taken in places where small-pox is prevalent. A copy should be given to each Medical Officer of Health and Inspector of Nuisances in the district.

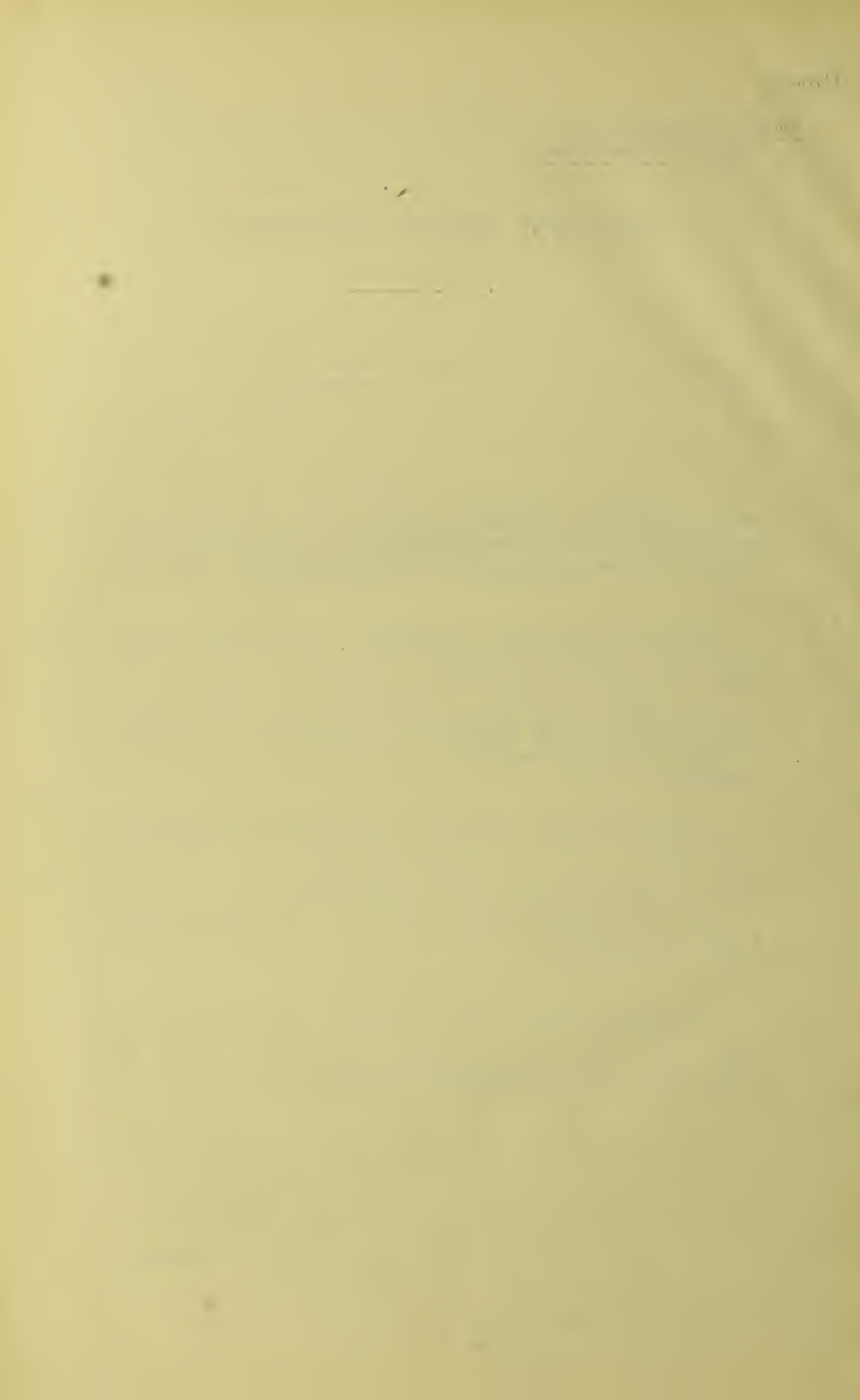
I am, Sir,

Your obedient Servant,

L. B. Provis.

Secretary.

The Town Clerk, *or* the
Clerk to the District Council.



OFFICIAL COPY.

TRANSLATION OF THE VENICE CONVENTION.

GENERAL REGULATIONS

FOR THE

PREVENTION OF THE INTRODUCTION AND
SPREAD OF THE PLAGUE.

LONDON:
PRINTED FOR HER MAJESTY'S STATIONERY OFFICE,
BY DARLING & SON, LTD., 34-40, BACON STREET, E.

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HODGES, FIGGIS, & CO., LIMITED, 104, GRAFTON STREET, DUBLIN.

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TRANSLATION OF THE VENICE CONVENTION.

Her Majesty the Queen of Great Britain and Ireland, Empress of India; His Majesty the King of Spain, and, in his name, Her Majesty the Queen Regent; His Majesty the Emperor of Germany, King of Prussia, on behalf of the German Empire; His Majesty the Emperor of Austria, King of Bohemia, etc., etc., and Apostolic King of Hungary; His Majesty the King of Belgium; the President of the French Republic; His Majesty the King of Greece; His Majesty the King of Italy; His Royal Highness the Grand Duke of Luxembourg; His Highness the Prince of Montenegro; His Majesty the Sultan of Turkey; Her Majesty the Queen of the Netherlands, and, in her name, Her Majesty the Queen Regent; His Majesty the Shah of Persia; His Majesty the King of Portugal and Algarva; His Majesty the King of Roumania; His Majesty the Emperor of Russia; His Majesty the King of Servia; the Federal Council of Switzerland.

Having decided to concert measures for the prevention of the introduction and spread of the plague, and for the necessary sanitary supervision of the Red Sea and Persian Gulf traffic, have nominated their plenipotentiaries as follows:—

[Here follow the names of the plenipotentiaries nominated by the several Governments.]

These plenipotentiaries, having exchanged their full powers, and found them in due and proper form, are agreed on the following provisions with regard to districts infected with plague, and with regard to arrivals from those districts:

1. The measures described in the General Sanitary Regulations for the prevention of the introduction and spread of the plague, annexed to the present Convention, are adopted and have the same force as if they were embodied in it.

2. The competent authorities in Morocco shall be requested to apply, to the ports of that country, measures in conformity with those prescribed in the above mentioned regulations.

3. Those countries which have not taken part in the Conference, or which have not signed the Convention, may, on demand, be permitted to become parties to it.

The fact shall be notified, through diplomatic channels, to the Italian Government, and by the latter to the other Governments who are parties to the Convention.

4. The present Convention shall remain in force for five years, dating from the exchange of ratifications.

It shall be renewed every five years, by tacit consent, unless one of the high contracting parties notifies, six months before the expiration of the aforesaid period of five years, its intention to withdraw from it.

In the event of one of the powers withdrawing from the Convention, this withdrawal will only affect that power.

5. The high contracting parties reserve to themselves the right of suggesting, through diplomatic channels, any modifications which they may deem necessary in the Convention or its appendix.

The Convention shall be ratified; the ratifications shall be deposited at Rome, as soon as possible, and, at the latest, within one year from the date of signature.

In witness whereof the respective plenipotentiaries have signed and sealed the Convention.

Executed at Venice, in eighteen copies, on the 19th March, 1897.

PRELIMINARY NOTE.—*In this translation, footnotes in ordinary type are translations of footnotes in the original text. Footnotes printed in italics are comments by the translator, and are not in the original text.*

GENERAL SANITARY REGULATIONS FOR THE PREVENTION OF THE INTRODUCTION AND SPREAD OF THE PLAGUE.

CHAPTER I.

Measures to be taken out of Europe.

I.

NOTIFICATION.

The Government of each country which adheres to the present Convention shall notify to the Governments of the other countries, by telegram, the appearance of any case of plague in their territories in accordance with section I, Chapter II, "Measures to be taken in Europe." Sections 2, 3 and 4 of the same chapter are also applicable.

It is desirable that the measures prescribed for countries in Europe in order to keep the signatories of the Convention informed of an outbreak of the plague, and of the means adopted to prevent its propagation, and importation into uninfected countries, should be applied in other countries.*

II.

SANITARY MEASURES FOR SHIPS SAILING FROM INFECTED PORTS.

MEASURES APPLICABLE BOTH TO ORDINARY VESSELS AND TO PILGRIM SHIPS.

1. Compulsory individual medical inspection, by day, on shore, at the time of embarkation, during such period as may be necessary, by a doctor appointed by public authority, of each person sailing on the ship.

The Consular authority interested in the ship may be present at this inspection.

2. Compulsory and rigorous disinfection, on shore, under the superintendence of a doctor appointed by public authority, of every contaminated† or suspected article in the manner prescribed in paragraph 5, Chapter III‡ of the appendix to this Convention.

3. Prevention of the embarkation of any person showing symptoms of plague.

* *In the original text, this recommendation is, save for two words (viz. l'état instead of l'apparition, and endroits instead of pays), a verbatim reproduction of the heading of section 1., Chapter II.*

† *Except where otherwise noted, "contaminated" is employed to render "contaminé" throughout this translation. It appears, however, from the proceedings of the Dresden Conference in 1893, that contaminé was considered as meaning specifically contaminated, i.e., infected. At that Conference the word "contaminé" was substituted in certain instances for the word "souillé," the latter being regarded as of less precise significance. "Souillé" still remains in Chapter I., section 3, article 25, in Chapter II., sections 4 and 5, and in Chapter IV., section 2, article 3 of this Convention.*

‡ *This is an error in drafting. The reference should be to Chapter III. not to paragraph 5, Chapter III.*

PILGRIM SHIPS.

1. When there is plague in the port, embarkation on board pilgrim ships shall not take place, until the pilgrims collected in groups have been subjected to observation sufficient to ascertain that none of them are suffering from plague.

It is to be understood that in carrying out this measure each Government may take into account local considerations and conditions.*

2. Pilgrims must prove that they possess the means absolutely necessary for the accomplishment of the pilgrimage, for the voyage out and for the return voyage and for the sojourn in the holy places, if local circumstances permit of this rule being enforced.

MEASURES TO BE TAKEN ON BOARD PILGRIM SHIPS.

SECTION I.—*General Rules.*

Art. 1.—The following regulations are applicable to pilgrim ships which carry Muhammadan pilgrims to or from the Hedjaz or the Persian Gulf.

Art. 2.—A ship is not to be considered a pilgrim ship although, in addition to her ordinary passengers, among whom may be included pilgrims of the upper classes, it carries pilgrims of the lowest class in a less proportion than one pilgrim per 100 tons gross.

Art. 3.—Every pilgrim ship, on entering the Red Sea and the Persian Gulf, must conform to the instructions contained in the *Rules specially prescribed for the pilgrimage to the Hedjaz* which shall be published by the Constantinople Board of Health, in accordance with the principles laid down in the present Convention.

Art. 4.—Steamers only are permitted to carry pilgrims on long voyages. The carriage of pilgrims by other ships on such voyages is prohibited.

Pilgrim ships, on coasting service, intended for short passages called "coasting voyages," must obey the instructions contained in the special rules mentioned in article 3.

SECTION II.—*Measures to be taken before departure.*

Art. 5.—The captain, or in default the proprietor or agent of every pilgrim ship, is bound to declare to the competent authority† of the port of departure his intention to embark pilgrims, at least three days before departure. This declaration must state the proposed date of departure and the destination of the vessel.

Art. 6.—On receipt of this declaration, the appointed authority will proceed, at the expense of the captain, to inspect and measure the vessel. The Consular authority interested in the ship may be present at this inspection.

Only the inspection will be made if the captain is already furnished with certificate of measurement furnished by the competent authority of his country, unless it is suspected that this document no longer corresponds to the actual state of the vessel.

Art. 7.—The competent authority will not permit the departure of a pilgrim ship until satisfied:

- (a) That the ship has been thoroughly cleaned and, if necessary, disinfected.
- (b) That the ship is in a condition to undertake the voyage without danger, that she is properly manned, equipped and ventilated,

* The Conference has decided, for instance, that, in the Dutch Indies, this observation may take place on board ships about to leave port.

† The competent authority is: in British India, an officer appointed on this behalf by the Local Government (Native Passengers' Ships Act, 1877, article 7); in the Dutch Indies, the master of the port; in Turkey, the sanitary authority; in Austro-Hungary, the port authority; in Italy, the captain of the port; in France, Tunis and Spain, the sanitary authority; in Egypt, the quarantine sanitary authority, etc.

and provided with a sufficient number of boats; that there is on board nothing that is, or may become, injurious to the health or safety of the passengers, and that the upper and lower decks are of wood, or of iron sheathed in wood.

- (c) That there is on board, properly stowed away, over and above the rations for the crew, sufficient food and fuel of good quality for all the pilgrims, during the declared duration of the voyage.
- (d) That the drinking-water is of good quality and from a source protected from contamination; that it is in sufficient quantity; that the tanks for drinking-water are safe from all contamination and so closed that the distribution of water can only be made by taps or pumps.
- (e) That the vessel carries a condenser, capable of distilling a minimum quantity of 5 litres* of water per diem for every person on board, including crew.
- (f) That the ship possesses a disinfecting apparatus, ascertained to be safe and efficacious.
- (g) That, in accordance with the rules laid down in articles 11 and 23, the vessel carries a doctor holding a diploma and commissioned† either by the Government of the country to which she belongs or by the Government of the port where the pilgrims embark, and that she carries medical stores.
- (h) That the deck is free from merchandise and all encumbrances.
- (i) That the arrangements on board are such as to allow of the measures prescribed in section III being carried out.

Art. 8.—The captain is bound to cause notices, in the languages chiefly spoken in the countries inhabited by the pilgrims, to be posted up in a conspicuous place, accessible to all concerned, showing:—

- (1) the destination of the ship;
- (2) the daily ration of food and water allowed to each pilgrim;
- (3) the price of articles not included in the daily ration, which can be procured on extra payment.

Art. 9.—The captain must not start without having in his possession—

- (1) a list, countersigned by the competent authority, showing the name, sex, and total number of pilgrims he is authorised to carry;
- (2) a bill-of-health, stating the name, nationality, and tonnage of the ship, the name of the captain and of the doctor, the exact number of persons embarked—crew, pilgrims and other passengers—the nature of the cargo and the port of departure.

The competent authority shall note on the bill-of-health whether or not the authorised number of pilgrims has been embarked, and, in the latter case, the additional number of passengers the vessel is authorised to embark at subsequent ports of call.

Art. 10.—The competent authority will be responsible for the adoption of effective measures to prevent the embarkation of any suspicious person or article,‡ in accordance with the rules laid down for precautions to be taken in ports.

SECTION III.—*Precaution to be taken on the voyage.*

Art. 11.—Every ship embarking pilgrims must have on board a doctor, holding a diploma and commissioned by the Government of the country to which the ship belongs, or by the Government of the port where the pilgrims are embarked. A second doctor must be carried when the number of pilgrims on board exceeds 1,000.

* A litre is 1·76 pints.

† Except in the case of Governments without commissioned doctors.

‡ See Chapter IV., section 1, articles 1 and 2 of this Convention. [*This should refer to article 1 only; article 2 deals with other matters.*]

Art. 12.—The doctor will inspect the pilgrims, tend the sick, and see that sanitary rules are observed on board.

He must, in particular—

- (1) satisfy himself that the rations issued to the pilgrims are of good quality, and of the quantity agreed on, and that they are properly cooked;
- (2) satisfy himself that the rules in article 20, regarding the distribution of water, are observed;
- (3) if not satisfied as to the quality of the drinking-water, call the attention of the captain, in writing, to the rules in article 21;
- (4) satisfy himself that the vessel is always kept clean, and particularly that the latrines are cleaned out, in accordance with the directions in article 18;
- (5) satisfy himself that the pilgrims' quarters are kept healthy, and, in case of the occurrence of infectious disease, that disinfection is carried out in the manner prescribed in article 19;
- (6) keep a diary of all sanitary matters during the voyage and submit this diary to the competent authority at the port of arrival.

Art. 13.—The vessel must be capable of accommodating the pilgrims in the between decks.

Over and above the space required for the crew, the ship must contain *sixteen superficial feet and a height between decks of about six feet** of space available for each person irrespective of age. In coasting vessels, each pilgrim must be allowed a space at least *six-and-a-half feet wide* along the gunwales.

Art. 14.—During the voyage the deck must be kept free from encumbrances; it must be reserved, night and day, for the passengers, and, placed without charge, at their disposal.

Art. 15.—The heavy baggage of the pilgrims will be registered, numbered and placed in the hold. Pilgrims may only keep with them such articles as are absolutely necessary. The nature, quantity and dimensions of such articles shall be decided by regulations made by each Government, for its own ships.

Art. 16.—The between decks must be carefully cleansed and rubbed with dry sand, mixed with disinfectants, every day while the pilgrims are on deck.

Art. 17.—On each side of the ship, on deck, a place must be set apart, screened from view and provided with a hand-pump, to supply sea-water, for the use of the pilgrims. One such place must be exclusively reserved for women.

Art. 18.—The ship must be provided, in addition to the closets for the crew, with latrines supplied with water in a minimum proportion of one per hundred passengers. Some latrines must be reserved for women.

No closets must be allowed between decks or in the hold. The latrines allotted to the passengers, as well as those of the crew, must be kept clean, and must be cleansed and disinfected three times a day.

Art. 19.—Disinfection of the ship must be carried out in accordance with the instructions in paragraphs 5 and 6 of Chapter III of the appendix to this Convention.

Art. 20.—At least 5 litres of drinking-water must be issued daily to each pilgrim, irrespective of age, free of charge.

Art. 21.—If there is any doubt as to the quality of the drinking-water, or as to the possibility of its pollution either at its source or during the

* In the original text the exact equivalent in English measurement is 5·76 feet.

voyage, it must be boiled or otherwise sterilised, and the captain is responsible for seeing that it is thrown overboard, at the first port of call, where it is possible to procure a purer supply.

Art. 22.—The ship must have two places for cooking set apart for the use of the pilgrims. The pilgrims will be forbidden to light fires elsewhere, especially on the deck.

Art. 23.—Each ship must carry such medical remedies and stores as are necessary for the treatment of the sick. The rules drawn up for pilgrim ships, by each Government, shall determine the nature and quantity of such remedies. Attendance and remedies will be provided for the pilgrims free of charge.

Art. 24.—A hospital properly fitted up, and constructed with due attention to health and safety, must be reserved for the accommodation of the sick. It must be capable of accommodating at least 5 per cent. of the pilgrims on board, and should provide for each patient a space of 32 square feet.*†

Art. 25.—The ship must be provided with the means of segregating persons attacked by plague.

The persons charged with the care of plague patients may alone have access to them, and these persons shall not be brought into contact with the other passengers.

All bedding, carpets and clothes which have been in contact with the sick must be immediately disinfected. The observance of this rule is specially enjoined in the case of the clothes of persons who have been in contact with the sick, which may have been contaminated.‡ Those of the abovementioned articles which are not valuable must be thrown overboard, if the ship is not in harbour or in a canal, or else burnt. Other articles should be carried to the disinfecting chamber in impermeable bags washed in a solution of corrosive sublimate.

The excreta of patients must be received in vessels containing a disinfecting solution. These vessels should be emptied into the latrines, which must be rigorously disinfected after each occasion on which this is done.

The patients' quarters must be rigorously disinfected.

The disinfection must be carried out in accordance with paragraph 5, Chapter III of this Convention.

Art. 26.—In the event of a death occurring during the voyage, the captain must enter the fact opposite the name of the deceased, on the list countersigned by the authority at the port of departure, and must also enter

* The conference having learned the nature of the hospital accommodation which must be provided in accordance with rule 53 of the rules framed under the Pilgrim Ships Act by the Government of India, recommend their adoption in substitution for article 24.

Extract :—

The hospital accommodation shall be provided on the upper deck either in the poop or in a deck-house. A permanent hospital shall be provided containing not less than six bunks, and having a deck area of at least 144 superficial feet and dimensions of not less than 864 cubic feet. On every pilgrim ship on which there are 50 or more female pilgrims, there shall be a separate permanent hospital, containing not less than two bunks, with a deck area of at least 72 superficial feet and dimensions of not less than 288 cubic feet, which shall be reserved for the use of women and children under 12 years of age. The hospitals shall be lighted and ventilated to the satisfaction of the Inspector, and shall be provided with permanent raised floors or platforms at least 4 inches off the deck. They shall be made as secure as any other deck-house, and the roof shall be well caulked and covered with painted canvas. No case of small-pox, cholera, yellow fever or plague shall on any account be treated in a permanent hospital.

Materials shall be carried for the construction on the upper deck of a separate temporary hospital for the treatment of such cases of sickness as it may be considered desirable specially to segregate (such as small-pox, cholera, yellow fever or plague). The part of the upper deck upon which such hospital shall, if required, be erected shall be pointed out by the Inspector. It shall be constructed on the same principles as the permanent hospital, and the superficial area of the floor shall not be less than 144 square feet.

† In the original text, 3 square metres, i.e., about 33 square feet.

‡ "Souillé" in the original text.

in the log the name of the deceased, age, place from which deceased came, supposed cause of death according to the medical certificate, and date of death.

In the event of a death from infectious disease, the corpse, wrapped in a shroud, impregnated with a solution of corrosive sublimate, shall be thrown into the sea.

Art. 27.—The bill-of-health given at the port of departure must not be altered during the voyage.

It will be countersigned at each port of call by the sanitary authority, who will enter—

- (1) the number of passengers disembarked or embarked at the port;
- (2) anything that has happened at sea affecting the life or health of the passengers;
- (3) the sanitary condition of the port of call.

Art. 28.—At each port of call, the captain must cause the list drawn up in accordance with article 9 to be countersigned by the competent authority.

In the event of a pilgrim disembarking during the voyage, the captain must note the fact on the list, opposite the pilgrim's name.

In the case of persons embarking, their names must be entered on the list in accordance with article 9. This must be done previously to the list being countersigned by the competent authority.

Art. 29.—The captain must see that all preventive measures taken during the voyage are entered in the log. The log is to be submitted by him to the competent authority at the port of arrival.

Art. 30.—The captain is bound to pay all sanitary charges, which must be included in the price of the tickets.

SECTION IV.—*Penalties.*

Art. 31.—Any captain convicted of a breach of his contract for the supply of water, food, or fuel, shall be liable to a fine of 2 pounds Turkish.* This fine will be paid to the pilgrim who has suffered from the breach of contract on proof that he demanded its fulfilment without effect.

Art. 32.—Any infraction of article 8 is punishable by a fine of 30 pounds Turkish.

Art. 33.—Any captain, who commits, or knowingly allows to be committed, any fraud with respect to the list of pilgrims, or of the bill-of-health prescribed in article 9, is liable to a fine of 50 pounds Turkish.

Art. 34.—Any captain arriving without a bill-of-health from the port of departure, or without its being countersigned at the ports of call, or being unprovided with the prescribed list, duly kept according to articles 9, 27, and 28, is liable, in each case, to a fine of 12 pounds Turkish.

Art. 35.—Any captain convicted of having or of having had, on the board, more than 100 pilgrims, without the presence of a commissioned doctor, in accordance with the rule in article 11, is liable to a fine of 300 pounds Turkish.†

* A Turkish pound is of the value of 22½ francs.

† Modified by a declaration, dated 24th January, 1900, which provides as follows:—

The States Signatories of the Venice International Sanitary Convention of the 19th March, 1897, having recognised the necessity of modifying article 35 of the Special Regulations, "Measures to be taken on board pilgrim ships," inserted in Chapter I. of the General Regulations annexed to the said Convention, in order to bring it into harmony with article 11 of the same Regulations, the undersigned, duly authorised by their respective Governments, declare as follows:—

Article 35 of the Special Regulations before mentioned is thus modified:—"Every captain proved to have, or to have had, pilgrims on board without the presence of one, and, eventually of a second commissioned medical officer, in conformity with the provisions of article 11, is liable to a fine of £ T. 300."

This declaration shall be submitted for the approval of the Legislature where such approval is requisite; it shall come into force as soon as its ratifications have been deposited at Rome in the manner provided for the ratifications of the Convention to which it relates.

*Executed at Rome, in fourteen copies, the 24th January, 1900.
(Here follow signatures.)*

Art. 36.—Any captain convicted of having or of having had, on board, more pilgrims than he was authorised to carry, in accordance with the rules in article 9, is liable to a fine of 5 pounds Turkish for each pilgrim in excess of the authorised number.

The disembarkation of the pilgrims in excess of the authorised number is to be effected at the first station where there is a competent authority, and the captain is bound to provide the pilgrims so disembarked with sufficient money to enable them to reach their destination.

Art. 37.—Any captain convicted of having disembarked pilgrims at a place other than their destination, unless with their consent, or from unavoidable cause, is liable to a fine of 20 pounds Turkish for each pilgrim wrongfully disembarked.

Art. 38.—All other infractions of these rules are punishable by a fine of from 10 to 100 pounds Turkish.

Art. 39.—Any offence reported during the voyage will be entered in the bill-of-health, and in the list of pilgrims. The competent authority will submit an official report on the offence to the proper authorities.

Art. 40.—In Turkish ports the offence will be tried before and the fine imposed by the competent authority, in accordance with the rules in Chapter V of this Convention.

Art. 41.—All agents required to assist in the execution of these rules are liable to punishment, according to the laws of their respective countries, for any failure on their part in carrying them out.

Art. 42.—These rules shall be posted up in the language of the nationality of the ship, and in the languages commonly spoken in the countries inhabited by the pilgrims, in a conspicuous and accessible place, on board every pilgrim ship.

III.

MEASURES TO BE TAKEN TO PREVENT THE IMPORTATION OF PLAGUE.

(1) BY LAND.

The measures to be taken, on land, with respect to travellers and things from regions infected* with plague, must conform to the sanitary principles laid down in this Convention. Modern methods of disinfection must be substituted for land quarantine.

For this purpose disinfecting chambers and other means of disinfection shall be established at properly selected posts on the routes followed by travellers. The same methods shall be adopted on railways, constructed or in course of construction. Merchandise shall be disinfected according to the principles adopted by this Convention.

Each Government is at liberty to close its frontiers to passengers and goods.

(2) BY SEA.

A.—MEASURES TO BE TAKEN IN THE RED SEA.

Art. 1.—*Healthy ships*.—(a) After medical inspection, ships passed as healthy, shall be granted free pratique at once, whatever the nature of their bill-of-health.

The ship must, however, have completed, or must complete, ten full days from the date of departure from the last infected* port at which she has touched.

* "*Contaminé*" in the original text.

The only treatment the authorities of the port of arrival may apply to such ships, consists in the measures prescribed for suspected ships (medical inspection, disinfection of soiled linen, pumping out the bilge-water, and substituting good drinking-water for that stored on board).

(b) Ordinary *healthy ships* shall be allowed to pass through the Suez Canal in quarantine. They shall enter the Mediterranean while continuing the ten days' period of observation. Ships carrying a doctor and a disinfecting chamber shall not be disinfected before the passage in quarantine.

Art. 2.—Suspected ships.—*Suspected ships* are those on board which there have been cases of plague at the time of departure, or during the voyage, but no new case for 12 days. Such ships shall be treated in a different manner according as to whether or not they have on board a doctor and disinfecting apparatus (disinfecting chamber).

(a) Ships having a doctor and disinfecting apparatus (disinfecting chamber) fulfilling the required conditions, shall be allowed to pass through the Suez Canal, in quarantine, in accordance with the rules prescribed for the passage.

(b) *Suspected ships*, having neither doctor nor disinfecting apparatus (disinfecting chamber) on board, shall, before being allowed to pass through the Canal in quarantine, be detained at Moses' Wells for the time necessary to disinfect soiled linen, body linen and other susceptible articles, and to ascertain whether the ship is in a sanitary condition.

Passage in quarantine shall be permitted in the case of a mail boat, or packet specially devoted to passenger traffic, without a disinfecting apparatus (disinfecting chamber), but with a doctor on board, if the local authority is satisfied by an official statement, that sanitary measures and measures of disinfection have been properly carried out, either at the time of departure, or during the voyage.

Free pratique may be given at Suez, after disinfection, in the case of mail boats or packets specially devoted to passenger traffic without a disinfecting apparatus (disinfecting chamber) but with a doctor on board, if the last case of plague took place more than 14 days before the date of arrival and if the sanitary state of the ship is satisfactory.

In the case of a steamer having a healthy passage of less than 14 days, passengers for Egypt shall be disembarked at Moses' Wells and isolated for the time necessary to complete ten days; their soiled linen and things for personal use shall be disinfected. They shall then obtain free pratique. Steamers having a healthy passage of less than 14 days and requiring free pratique for Egypt shall be detained at Moses' Wells for the time necessary to complete ten days; they shall undergo the prescribed disinfection.*

Art. 3.—Infected ships, that is to say, those with plague on board, or on which cases have occurred within 12 days. These are divided into ships with a doctor and disinfecting apparatus (disinfecting chamber), and those without a doctor, and without a disinfecting apparatus (disinfecting chamber).

(a) *Ships without a doctor and a disinfecting apparatus (disinfecting chamber)* shall be detained at Moses' Wells and persons suffering from plague shall be disembarked and isolated in a hospital. Disinfection shall be thoroughly carried out. The other passengers shall be disembarked, and isolated in as small groups as possible, so that if plague breaks out in one group, the whole party will not be affected.

The soiled linen, things for personal use and clothes of the crew and passengers, and the ship, shall be disinfected.

* This paragraph prescribes detention to complete 10 days in the case of certain suspected vessels. But suspected vessels are those which have had no case on board for 12 days, and therefore have already completed their 10 days. It would seem, from the Conference proceedings (pp. 342 and 184 of the *Procès-verbaux*), that it was intended that passengers for Egypt should complete 15 days, and that boats for Egypt should be detained 48 hours.

It is to be understood that this does not require the discharge of the cargo, but only the disinfection of that part of the ship which has been infected.

The passengers shall remain ten days at the station at Moses' Wells; when cases of plague have not occurred for several days previous to arrival, the term of isolation shall be diminished and shall vary according to the date of the occurrence of the last case.

Thus if the last case occurred 9, 10, 11 or 12 days before arrival, the term of observation shall be 24 hours; if it took place 8 days before arrival, the observation shall be for 2 days; if it took place 7 days before arrival, it shall be for 3 days; and so on according to the table given below.

(b) *Ships with a doctor and disinfecting apparatus (disinfecting chamber).*—Ships with a doctor and disinfecting chamber shall be detained at Moses' Wells.

The ship's doctor shall state, on oath, what persons on board are suffering from plague. These patients shall be disembarked and segregated.

After their disembarkation, the soiled linen of the other passengers and of the crew shall be disinfected on board.

If the plague has only attacked the crew, the disinfection of linen shall be confined to the soiled linen of the crew and to the linen in the crews' berths.

The ship's doctor shall also declare, on oath, the portion or compartment of the ship occupied by the patient or patients, and the section of the hospital to which they were removed. He shall also state, on oath, what persons have been in relation with the plague patients, since the appearance of the malady, either by direct contact or by contact with objects capable of transmitting infection. These persons only shall be considered as "suspected."

The part or compartment of the ship, and the section of the hospital in which the patient or patients have been located, shall be thoroughly disinfected. By "the part of the ship" is meant the cabin of the patient, the adjoining cabins, the passage to these cabins, the deck, and the parts of the deck where the patient or patients have been.

If it is impossible to disinfect the part or the compartment of the ship, which has been occupied by persons attacked by the plague, without disembarking the persons declared to be suspected, these persons shall either be put on another ship specially set apart for this purpose, or be disembarked and housed at the sanitary station, but not in contact with the patients, who shall be placed in the hospital.

The duration of this detention on board, or on land, for the purpose of disinfection, shall be as short as possible, and shall not exceed 24 hours.

The suspected persons shall be kept under observation either on their own ship, or on a ship provided for this purpose; the duration of this observation shall vary according to the following table: —

When the last case of plague occurred on the 12th, 11th, 10th or 9th day before arrival at Suez.							The observation shall be for 24 hours.	
If it occurred on the 8th day before arrival at Suez							...	2 days.
"	"	"	7th	"	"	"	...	3 "
"	"	"	6th	"	"	"	...	4 "
"	"	"	5th or 4th day	"	"	"	...	5 or 6 "
"	"	"	3rd or 2nd	"	"	"	...	7 or 8 "
"	"	"	1st day	"	"	"	...	9 "

Passage in quarantine may be permitted before the expiration of the periods stated in the above table, if the sanitary authority deems it possible; it shall, in any case, be permitted on the completion of the disinfection, if the ship leaves behind, in addition to the sick, the persons classed above as "suspected."

A pontoon, with a disinfecting chamber on board, may be brought alongside the ship to hasten the process of disinfection.

Infected ships seeking free pratique in Egypt shall be detained for ten days at Moses' Wells, dating from the last case on board, and shall undergo the prescribed disinfection.

The time taken in disinfecting is included in the term of observation.

Organisation for carrying out the measures of surveillance and disinfection at Suez and at Moses' Wells.

1. The medical inspection, prescribed by the regulations, of every ship arriving at Suez shall be made by one of the doctors of the station. Arrivals from infected* ports will be inspected by day.

2. There shall be seven doctors—a Principal Medical Officer, four medical officers, and two assistants. Should this medical staff be found insufficient, the services of the naval doctors of the different Powers will be utilised, under the orders of the Principal Medical Officer of the sanitary station.

3. They shall have a regular diploma, and should be selected from amongst those who have gone through a special course of practical epidemiology and bacteriology.

4. They shall be appointed by the Minister of the Interior on the recommendation of the Sanitary, Maritime, and Quarantine Board of Egypt.

5. The pay of the assistants shall be at the rate of 6,000 francs a year, the pay of the four medical officers shall be at the rate of 8,000 francs a year, rising to 12,000 francs, and the pay of the Principal Medical Officer shall rise from 12,000 to 15,000 francs.

6. The disinfecting and isolation station of Moses' Wells is under the authority of the Principal Medical Officer at Suez.

7. When patients are disembarked at this place, two of the Suez doctors shall be posted there, one to tend the plague patients, the other to tend persons not suffering from the plague.

8. The number of sanitary guards shall be 20. One of them shall be in special charge of the disinfecting chambers at Moses' Wells.

9. The disinfecting and quarantine station of Moses' Wells shall be provided with—

- (1) At least three disinfecting chambers, of which one shall be placed on board a pontoon.
- (2) A new segregation hospital containing 12 beds, for the sick and suspected. This hospital will be so arranged that the sick and suspected, and men and women, can be separately segregated.
- (3) Barracks, hospital tents, and ordinary tents, for the use of the persons disembarked.
- (4) A sufficient number of baths and washing-places.
- (5) The buildings required for the usual offices, the medical staff, the guards, etc.; a store and a laundry.
- (6) A reservoir for the water-supply.

The passage, in quarantine, of the Suez Canal.

1. Permission to pass the Suez Canal in quarantine is granted by the sanitary authority at Suez; the Board must be immediately informed when such permission is given. In doubtful cases, the decision rests with the Board.

2. A telegram is at once sent to the authority appointed by each Power. The telegram shall be sent at the expense of the ship.

* "*Contaminé*" in the original text.

3. Each Power shall prescribe penal rules for those vessels, which depart from the course declared by the captain, and enter without license one of the ports of that Power. Exception shall be made in the case of absolute necessity or if the vessel is compelled to put into port for shelter.

On being hailed the captain must declare if he has on board gangs of native stokers, or hired servants, of any description, not included in the roll of the crew, or the register kept for the purpose. The following questions shall be put to the captains of all ships arriving at Suez from the south and shall be answered on oath:—

Have you any supernumeraries: stokers, or other hands not included in the ship's roll or in the special register?

What is their nationality?

Where did you embark them?

The sanitary doctors must satisfy themselves as to the presence of these supernumeraries, and if they find that any of their number are missing, they must inquire carefully into the cause of their absence.

4. A sanitary officer and two sanitary guards will go on board. They must accompany the ship as far as Port Said; their duty is to prevent communication, and to see to the execution of the measures prescribed for the passage of the Canal.

5. Passengers may embark at Port Said, in quarantine, but all embarkation and disembarkation, and all transhipment of passengers or goods, are forbidden during the passage of the Canal from Suez to Port Said.

6. Ships passing, in quarantine, must make the journey from Suez to Port Said without lying up.

In case of the vessel running aground, or being compelled to lie up, the necessary operations must be carried out by the staff of the ship, all communication with the staff of the Suez Canal Company being avoided:

Transports with troops passing through in quarantine must do so only by day.

If they are compelled to pass a night in the Canal, they must anchor in Lake Timsah.

7. Ships passing in quarantine are forbidden to stop at Port Said, except in the cases provided for in paragraphs 5 and 8. The operation of revictualling must be carried out with the appurtenances on board.

All stevedores and other persons who have gone on board the ship will be isolated on the quarantine pontoon. Their clothes will there undergo the prescribed disinfection.

8. When it is absolutely necessary for ships, passing in quarantine, to coal at Port Said, they must do so at a place, to be fixed by the Sanitary Board, where the necessary isolation and sanitary supervision can be secured. When effective supervision on board is possible, and all contact with the people on board can be avoided, coaling by the labourers of the port may be authorised. At night the place must be lighted by the electric light.

9. The pilots, electricians, agents of the company and sanitary guards shall be disembarked at Port Said, outside the port, between the jetties, and from thence shall be taken direct to the quarantine pontoon, where their clothes will be thoroughly disinfected.

Measures to be taken in the case of ships arriving in Egypt from a Plague infected port by way of the Mediterranean.*

1. Ordinary *healthy* ships, coming from a European or Mediterranean plague-infected port, wishing to pass the Suez Canal, shall be allowed to do so in quarantine. They shall continue their voyage under observation for ten days.

* "Contamine" in the original text.

2. Ordinary *healthy* ships, wishing to touch at Egypt, can put in at Alexandria or Port Said, where the passengers shall complete the period of observation, either on board, or in the Lazaretto of Gabari, as the local sanitary authority may direct.

3. The measures to be taken as regards *infected* and *suspected* ships, coming from a plague-infected European or Mediterranean port, and desiring to call at an Egyptian port, or to pass the Suez Canal, shall be settled by the Sanitary Council in accordance with the regulations adopted by this Convention.

These measures must, before they can be carried out, be accepted by the different Powers represented on the Board. They shall regulate the conditions to be imposed with regard to ships, passengers and goods.

The Board shall, similarly, submit to the Powers a code of rules dealing with cholera.

These two codes must be submitted as soon as possible.

Sanitary supervision of Pilgrims in the Red Sea.

Sanitary rules for Pilgrim Ships from an infected port in the (reorganised) sanitary station of Kamaran.*

Pilgrim ships coming from the south, and bound for the Hedjaz, must in the first instance put into the sanitary station of Kamaran, where they shall undergo the following treatment:—

Ships declared *healthy* shall, after medical inspection, and on completion of the operations detailed below, be given free pratique.

The pilgrims shall be disembarked, they shall wash or take a bath in the sea; their soiled linen, and any portion of their things for personal use or their baggage, open, in the opinion of the sanitary authority, to suspicion, shall be disinfected. The duration of these operations, including the disembarkation, and embarkation, must not exceed 72 hours. If no case of plague is reported during these operations, the pilgrims shall be re-embarked immediately, and the ship shall proceed to the Hedjaz.

Suspected ships, that is to say, those which have had cases of plague on board, at the time of departure, but no fresh case for 12 days, shall be treated as follows: the pilgrims shall be disembarked; they shall wash or take a bath in the sea; their soiled linen, and any portion of their things for personal use or of their baggage, open, in the opinion of the sanitary authority, to suspicion, shall be disinfected; the bilge-water shall be pumped out; and the parts of the ship inhabited by the sick shall be disinfected.

The duration of these operations, including the disembarkation and embarkation, must not exceed 72 hours. If no case of plague is reported during these operations, the pilgrims shall be immediately re-embarked, and the ship shall proceed to Jeddah, where a second medical inspection shall take place on board. If the result is favourable, and the ship's doctor declares on oath in writing that there has been no case of plague during the passage, the pilgrims shall be at once disembarked.

If, on the contrary, one or more cases of plague have occurred during the voyage or on arrival, the ship shall be sent back to Kamaran, where she shall undergo the treatment for *infected* ships.

Infected ships, that is to say, those having cases on board, or having had them within 12 days, shall undergo the following treatment:—

The plague patients shall be disembarked and segregated in the hospital. The disinfection shall be thoroughly carried out. The other passengers shall be disembarked and isolated, by groups, as small as possible, so that if the plague breaks out in one group, the whole party will not be affected.

* "*Contaminé*" in the original text.

The soiled linen, the things for personal use, and the clothes of the crew and of the passengers and the ship, shall be disinfected.

The local sanitary authority shall decide if the discharge of heavy baggage and goods is necessary, and if the whole ship must be disinfected, or a portion only.

The passengers shall remain at the Kamaran station for 12 days; when no cases of plague have occurred for several days before arrival, the period of isolation may be diminished and it may vary according to the date of occurrence of the last case, and the orders of the sanitary authority.

The ship shall then proceed to Jeddah, where a strict individual medical examination shall take place on board. If the result is satisfactory, the pilgrime shall be disembarked. If, on the other hand, plague has appeared on board during the voyage, or on arrival, the ship shall be sent back to Kamaran, where she shall again undergo the treatment for *infected* ships.

Improvements to be made in the station of Kamaran.

A.—Complete evacuation of the Island of Kamaran by its inhabitants.

B.—Measures to ensure safety, and to facilitate navigation in the bay of the Island of Kamaran:—

1. Provision of buoys and beacons in sufficient numbers.
2. Construction of a principal mole or quay for the disembarkation of passengers and baggage.
3. A separate landing stage for the embarkation of the pilgrims of each encampment.
4. A steam-tug and sufficient barges for the disembarkation and embarkation of the pilgrims. The disembarkation of pilgrims from infected ships shall be carried out with the appurtenances on board.

C.—The establishment of a sanitary station, to contain—

1. A system of railways, connecting the landing-places with the headquarters of the administration, the places for disinfection, and the places where the different offices and encampments are situated.
2. Quarters for the administration and for the staff employed in the sanitary and other offices.
3. Buildings for the disinfection and washing of wearing apparel and other articles.
4. Buildings where the pilgrims can wash or take sea baths whilst their clothes are being disinfected.
5. Separate and completely isolated hospitals for both sexes:—
 - (a) For the observation of suspected persons.
 - (b) For plague patients.
 - (c) For patients suffering from other contagious diseases.
 - (d) For ordinary patients.
6. The encampments shall be completely separated from each other, and the distance between them must be as great as possible; the pilgrims' quarters shall be constructed on the most approved sanitary principles, and must not contain more than 25 persons each.
7. A well situated cemetery, distant from all habitations, free from sub-soil water, and drained 20 inches below the level of the graves.

D.—Sanitary appliances:—

1. Steam disinfectors in sufficient number, and fulfilling the conditions of safety, efficacy and rapidity.
2. Spray-producers, disinfecting chambers and the necessary appliances for chemical disinfection, as described in Chapter III of the appendix to this Convention.

3. Water-distilling machines; apparatus for the sterilization of water by heat; ice machines.

A system of pipes and reservoirs for the distribution of drinking-water, which should be closed, impervious, and from which water can be taken only by means of taps or pumps.

4. A bacteriological laboratory with the necessary staff.

5. An arrangement of portable vessels for the reception of fœcal matter after disinfection. Sewage farms for the disposal of fœcal matter on one of the parts of the island most distant from the encampments, arranged with due regard to their proper sanitary working.

6. An arrangement for the removal of slop and waste water from the encampments, which shall prevent its stagnation and its use for drinking purposes. The slop and waste water of the hospitals should be disinfected with slaked lime, according to the instructions contained in Chapter III of the appendix to this Convention.

E.—The provision by the sanitary authority in each encampment of a store for food and a store for fuel.

The tariff of prices fixed by the competent authority will be hung up in several places in the encampment, in the languages commonly spoken in the countries inhabited by the pilgrims.

The doctor of the encampment will be responsible for the daily control of the quality and quantity of the provisions.

Water will be provided free of charge.

Improvements to be made in the sanitary stations of Abu-Saïd, Vasta, and Abu-Ali.

1. Erection of two plague hospitals for men and women, at Abu-Ali.
2. Erection at Vasta of a hospital for ordinary cases.
3. Construction at Abu-Saïd and Vasta of masonry buildings, capable of containing 50 persons each.
4. Three disinfecting chambers to be placed at Abu-Saïd, Vasta and Abu-Ali, with laundries and accessories.
5. Washing places to be provided at Abu-Saïd and Vasta.
6. Water-condensers to be provided on each of the islands of Abu-Saïd and Vasta, capable altogether of supplying 15 tons of water per diem.
7. The rules for cemeteries, fœcal matter, and slop and waste water, shall be based on the same principles as those for Kamaran. A cemetery shall be provided on one of the islands.

The rules with regard to the supply of food and water at Kamaran prescribed under heading E are applicable to the encampments of Abu-Saïd, Vasta and Abu-Ali.

It is desirable that the arrangements at Abu-Saïd, Vasta and Abu-Ali should be completed as soon as possible.

Reorganisation of the sanitary station of Jebel-Tor.

The Conference confirms the recommendations and views expressed on previous occasions and leaves to the Sanitary Board the duty of carrying out the improvements. The Conference also considers—

1. That it is necessary to supply the pilgrims with good drinking-water, either from a local source or by distillation.

2. That it is important that all food imported by pilgrims from Jeddah and from Yembo, when there is plague in the Hedjaz, should be disinfected as a suspected commodity, or completely destroyed, if it appears to have deteriorated so as to have become dangerous.

3. That steps should be taken to prevent pilgrims bringing with them leather bottles from Jebel-Tor. They should be replaced by earthenware vessels or by metal cans.

4. That each section should be provided with a doctor.

5. That a Port Officer should be posted at El-Tor to superintend disembarkation, and to see that the rules are observed by the captains and sarangs of the vessels.

6. That during the pilgrim season, only pilgrims should be detained in observation at Jebel-Tor.

7. That the village of Kouroum should be evacuated.

8. That the encampment of Jebel-Tor should be connected by telegraph with the sanitary station of Suez.

Regulations for the Arabian Ports of the Red Sea during the Pilgrim Season.

Sanitary Rules to be applied to Pilgrim Ships coming from the North.

(1) The Outward Voyage.

If plague is not reported to exist at the port of departure or in its neighbourhood, and if no case has occurred during the voyage, the ship is immediately given free pratique.

If the plague is reported to exist at the port of departure, or in its neighbourhood, or if a case has occurred during the voyage, the ship shall be subjected at Jebel-Tor to the rules prescribed for ships which come from the south and stop at Kamaran.

(2) The Homeward Voyage.

Art. 1.—Any ship coming from a port of the Hedjaz or from any other port on the Arabian coast of the Red Sea, infected* with plague, having on board pilgrims or any similar collection of persons bound for Suez or for a Mediterranean port, must proceed to El-Tor, there to undergo the prescribed observation as detailed below.

The disembarkation and disinfection of passengers, baggage and susceptible goods shall be effected there, as well as the disinfection of things for personal use, and of the ship.

Art. 2.—Ships bringing back pilgrims shall only be allowed to pass through the Canal in quarantine. Egyptian pilgrims after leaving El-Tor must disembark at Ras Mallap, or some other place appointed by the Sanitary Board, there to undergo three days' observation and a medical inspection, before being given free pratique.

In the event of a suspicious case occurring on board during the voyage from El-Tor to Suez, the ship shall be sent back to El-Tor.

Art. 3.—Agents of navigation companies and captains of ships are warned that, after the completion of the observation at the sanitary station of El-Tor and at Ras Mallap, only Egyptian pilgrims will be permitted to leave the ship, in order to return to their homes. Only pilgrims with a certificate of residence, issued by an Egyptian authority, and in accordance with the prescribed form, shall be recognised as Egyptians or as residents of Egypt. Specimens of this form shall be deposited with the consular and sanitary authorities of Jeddah and Yembo, where agents and ships' captains can inspect them.

* "Contaminé" in the original text.

Non-Egyptian pilgrims, such as Turks, Russians, Persians, Tunisians, Algerians, natives of Morocco, etc., may not, after quitting El-Tor, be disembarked in an Egyptian port. Navigation companies' agents and captains are, therefore, warned that the transshipment of non-Egyptian pilgrims, either at Tor, Suez, Port Saïd, or Alexandria, is forbidden.

Vessels having on board pilgrims belonging to the nationalities mentioned in preceding paragraph will be treated according to the rules for such pilgrims, and will not be permitted to enter any Egyptian Mediterranean port.

Art. 4.—If it is not reported that plague exists in the Hedjaz, or has existed during the pilgrimage, vessels shall be subjected, at Jebel-Tor, to the rules prescribed at Kamaran for healthy ships.

The pilgrims shall be disembarked; they shall wash or take a sea-bath; their soiled linen, the portion of their things for personal use and of their baggage, open, in the opinion of the sanitary authority, to suspicion, shall be disinfected; the duration of these operations, including disembarkation and embarkation, must not exceed 72 hours.

If plague is reported to exist in the Hedjaz or to have existed during the pilgrimage, vessels shall be subjected, at Jebel-Tor, to the rules prescribed at Kamaran for infected ships.

The plague patients shall be disembarked, and isolated in the hospital. Disinfection shall be thoroughly carried out. The other passengers shall be disembarked, and isolated by groups, as small as possible, so that if the plague breaks out in one group the whole party will not be affected.

The soiled linen, things for personal use, and clothes of the crew and of the passengers, and the ship, shall be disinfected.

The local sanitary authority shall decide if the discharge of heavy baggage and goods is necessary, and if the whole ship must be disinfected, or a portion only.

All the pilgrims shall be kept under observation for 2 full days, counting from the day on which the operation of disinfection was completed. If a case of plague occurs in any of the groups, the period of 12 days commences for that group from the day on which the last case is reported.

Art. 5.—Ships coming from a plague-infected* port of the Hedjaz or from any other plague-infected port on the Arabian Red Sea coast without having embarked pilgrims or any similar collection of persons and without having had any suspicious incident during the voyage, are placed in the category of ordinary suspected ships. They shall be subjected to the preventive measures and treatment laid down for such ships.

If they are bound for Egypt, they shall be kept under observation at Moses' Wells, for ten days, counting from the date of departure, and shall in addition, be subjected to all the measures laid down for suspected ships (disinfection, etc.), and shall only be given free pratique after a favourable medical inspection.

It is to be understood that if these ships have had any suspicious incident during the voyage, they shall be placed under 12 days' observation at Moses' Wells.

Art. 6.—Caravans of Egyptian pilgrims must, before entering Egypt, undergo strict quarantine at El-Tor for 12 days; they shall then be sent to Ras Mallap, and there kept under observation for 5 days, after which they shall only be granted free pratique after a favourable medical inspection, and disinfection of their effects.

* "*Contaminé*" in the original text.

Caravans of foreign pilgrims shall, before returning home by land, be subjected to the same measures as Egyptian caravans, and must be accompanied by sanitary guards to the limits of the desert.

Caravans coming from the Hedjaz by way of Akabah or Moila shall be subjected, on arrival at the Canal, to medical inspection and disinfection of soiled linen and things for personal use.

Art. 7.—(1). The trans-shipment of pilgrims is strictly forbidden in Egyptian ports.

(2) Ships coming from the Hedjaz or from an Arabian Red Sea port, with a clean bill-of-health, not having on board pilgrims or any similar collection of persons and on which no suspicious incident has occurred during the voyage, shall be given free pratique at Suez, after favourable medical inspection.

Art. 8.—Ships leaving the Hedjaz with a clean bill-of-health, and having on board pilgrims bound for a port on the African coast of the Red Sea, may call at Suakin, there to undergo three days' observation, all passengers being disembarked and detained in the quarantine encampment.

Art. 9.—Caravans of pilgrims arriving by land shall be subjected to medical inspection and disinfection at Moses' Wells.

Sanitary measures to be taken on the departure for the South of Pilgrims from the ports of the Hedjaz.

The ports of embarkation shall be provided with sufficient sanitary appliances to enable pilgrims returning to their homes to be subjected to measures similar to those which are enforced on the departure of pilgrims from ports beyond the Straits of Bab-el-Mandeb.

The application of these measures shall be optional, that is to say that they shall not be applied unless the consular authority of the country to which the pilgrims belong, or the doctor of the ship on board which they propose to embark, considers it necessary.

B.—MEASURES TO BE TAKEN IN THE PERSIAN GULF.

I.—Sanitary rules for arrivals by sea in the Persian Gulf.

Any ship with plague on board, or on board which one or more cases have occurred within 12 days, will be considered *infected*.

Any ship on board which there has been a case of plague at the time of departure, or during the voyage, but on which no case has occurred for 12 days, will be considered *suspected*.

Any ship, even though coming from an infected* port, which has had no death from plague nor case of plague on board, either before departure, during the voyage, or on arrival, will be considered as *healthy*.

Infected ships will be subjected to the following rules:—

- (1) The sick will be immediately disembarked and isolated.
- (2) The other persons on board must also, if possible, be disembarked and kept under observation, for a period varying according to the sanitary condition of the ship, and the date of the last case, but which must not exceed ten days.
- (3) The soiled linen, the things for personal use, and all articles belonging to the crew and passengers, which, in the opinion of the sanitary authority of the port shall be considered as contaminated, shall be disinfected, as also the ship, or only the contaminated part of the ship.

A more extensive disinfection may be ordered by the local sanitary authority.

* "*Contaminé*" in the original text.

Suspected ships will be subjected to the following measures:—

- (1) Medical inspection.
- (2) The soiled linen, the things for personal use, and all articles belonging to the crew and passengers, which, in the opinion of the local sanitary authority, shall be regarded as contaminated, shall be disinfected.
- (3) All parts of the ship which have been inhabited by patients or suspicious cases must be disinfected. A more extensive disinfection may be ordered by the local sanitary authority.
- (4) Pumping out the bilge-water after disinfection, and the substitution of good drinking-water for the water stored on board.
- (5) The crew and passengers will be kept under observation for a period of ten days, commencing from the date at which plague had ceased to exist on board.

Healthy ships shall be given free pratique at once, irrespective of the nature of the bill-of-health.

Such ships must, however, in all cases, have completed, or must complete, ten full days from the date of departure from the last infected* port at which they have touched.

The only measures the authority of the port of arrival may apply to healthy ships are those prescribed for suspected ships (medical inspection, disinfection, pumping out the bilge-water, and the substitution of good drinking-water for the water stored on board).

It is to be understood that the competent authority of the port of arrival may always demand a written declaration on oath from the doctor, or failing him, from the captain, that there has been no case of plague on the ship since her departure.

In deciding on the extent to which effect is to be given to the measures prescribed above, the competent authority of the port shall take into consideration the fact that there is a qualified doctor or a disinfecting apparatus (disinfecting chamber) on board the ships coming under the three headings mentioned above.

Special measures may be prescribed for ships in an insanitary condition.

Goods arriving by sea must be treated in the same way as goods transported by land, as regards disinfection, prohibition of import, transit, and quarantine.

Any ship objecting to submit to the obligations imposed by the authority of the port shall be free to put back to sea.

The disembarkation of goods from such ships may be authorised after the following necessary precautions:—

- (1) Isolation of the ship, crew, and passengers.
- (2) Pumping out the bilge-water after disinfection.
- (3) Substitution of good drinking-water for the water stored on board.

The disembarkation of passengers wishing to land from such ships may also be authorised, on condition that they submit to the measures prescribed by the local authorities.

II.—*Sanitary posts in the Persian Gulf.*

There are two places in the Persian Gulf where the establishment of sanitary posts is expedient—one in the Straits of Ormuz (the Island of Ormuz, the Island of Kishm, or, failing these, a place to be settled in their vicinity); the other at a place to be settled in the neighbourhood of Bassorah.

* "*Contaminé*" in the original text.

The sanitary post in the Straits of Ormuz shall be provided with at least two doctors, and with sanitary officers and guards and complete appliances for disinfection. A small hospital shall be constructed.

A big lazaretto and apparatus for disinfecting goods shall be constructed at the post near Bassorah with a medical staff of several doctors.

Before entering the Persian Gulf, ships shall be hailed at the sanitary post in the Straits of Ormuz. They shall there be subjected to the sanitary measures prescribed by the rules. If there are any plague cases on board, they shall be disembarked.

Ships, however, which have to proceed up the Shatt-el-Arab shall be permitted, if the period of observation is not completed, to continue their voyage, on condition that they traverse the Persian Gulf and the Shatt-el-Arab in quarantine. A chief guard and two sanitary guards, taken on board at Ormuz, shall keep a watch on the ship as far as Bassorah, where a second medical inspection shall be made, and the necessary measures of disinfection shall be carried out.

Ships which have to call at Persian ports to disembark passengers or goods will be permitted to do so at Bushire, when suitable sanitary arrangements have been made there; until then, they shall land their passengers and goods at Ormuz or Bassorah.

It is to be understood that a healthy ship shall be granted free pratique at the ports of the Persian Gulf ten days after the date of departure from the last infected* port at which she has touched, provided that she is ascertained to be healthy on arrival.

The sanitary posts at Ormuz and Bassorah shall be under the control of the Constantinople Board of Health. The Ottoman and Persian Governments shall come to an agreement with regard to the post at Ormuz.

Until the Ottoman and Persian Governments have arrived at this agreement, a sanitary post shall be established as a temporary measure in one of the islands in the Straits of Ormuz, and the Board of Health shall post doctors and sanitary guards at this place. These guards shall accompany ships passing in quarantine up the Shatt-el-Arab to the post established in the neighbourhood of Bassorah.

The Constantinople Board of Health shall also organise without delay sanitary posts at Khanikin and Kizil Dize, near Bayazid, on the Perso-Turkish and Russo-Turkish frontiers.

CHAPTER II.

Measures to be taken in Europe.

SECTION I.—*Measures intended to keep the Governments which are parties to the Convention acquainted with the circumstances of an epidemic of Plague, and with the means taken to prevent its spread and its importation into healthy places.*

Notification and subsequent communications.

The Government of an infected* country must notify to the other Governments the existence of all cases of plague. This measure is essential.

It will only be of real use, if the Government of the infected* country is itself informed of cases of plague and suspicious cases occurring in its territory. It cannot, therefore, be too strongly impressed on the different Governments that doctors should be obliged to report all cases of plague.

The notification shall state the existence of cases of plague, the places where they have occurred, the date of their appearance, the number of cases reported, and the number of deaths.

* "Contaminé" in the original text.

The notification shall be made to the diplomatic or consular agents in the capital of the infected* country. In the case of countries not represented there, the notification shall be made, by telegram, direct to the foreign Governments.

This first notification shall be followed by subsequent regular communications, with a view to keep the Governments informed of the course of the epidemic. These communications shall be made at least once a week.

The reports concerning the outbreak and course of the disease must be as complete as possible. They shall, in particular, state the measures taken to check the spread of the epidemic and must give, in detail, the preventive measures adopted, with regard to—

- sanitary or medical inspection;
- isolation;
- disinfection;

and the measures prescribed with regard to the departure of ships, and the export of susceptible articles.

It is to be understood that neighbouring countries reserve to themselves the right to make special arrangements, with the object of organising an exchange of direct information between the principal administrative officers on their frontiers.

The Government of each country must publish, immediately the measures which it decides to adopt with regard to arrivals from an infected* country or local area.

Information as to the measures so published shall be at once communicated to the diplomatic or consular agent of the infected* country, resident in the capital. In the absence, in the capital, of a diplomatic or consular agency, the communication shall be made direct to the Government of the country concerned.

The withdrawal of these measures, or any modifications which may be made in them, must be communicated in the same manner.

SECTION II.—*Conditions under which a local area† is to be considered infected* or healthy.*

Any area in which a case of plague has been officially reported to exist will be considered to be infected.*

Any area in which plague has existed will cease to be considered as infected* when it is officially reported that no death or fresh case of plague has taken place for ten days after the recovery or death of the last case, provided that the necessary disinfection has been carried out.

Preventive measures shall be put in force as regards the infected* territory as soon as cases of plague are officially reported.

These measures shall be discontinued as soon as it is officially stated that the area has again become healthy.

The occurrence of a few imported cases in a local area shall not be regarded as warranting resort to these measures, unless these cases give rise to other cases.

SECTION III.—*Necessity of restricting to the infected* local areas the measures intended to prevent the spread of the epidemic.*

In order that preventive measures be confined to the infected tract the Governments must apply them to ships, persons and things from infected* areas only.

* “Contaminé” in the original text.

† A local area means a portion of the territory of a country placed under a recognised administrative authority: as, for instance, a province, a Local Government, a district, a department, a canton, an island, a commune, a town, a village, a port, an area reclaimed from the sea, etc., whatever may be the extent and population of the portion of territory.

But the obligation to restrict precautions to the infected* area shall exist only on the express condition that the Government of the infected* country takes the necessary measures to prevent the export of susceptible articles derived from the infected* area.

No restrictive measures should be enforced against ships, persons, or things from an infected* area, if they left it at least five days before the occurrence of the first case of plague.

SECTION IV.—“*Susceptible*” goods and articles considered in relation with rules regarding the prohibition of import or of transit, and rules regarding disinfection.

I.—Import and transit.

The following is a list of the susceptible articles and goods, the importation of which may be prohibited:—

1. Body-linen things (*hardes*) and clothes that have been worn (things for personal use), and bedding that has been used.

When these articles are carried as baggage, or in consequence of a change of abode (household goods) they are subjected to special treatment.

Soldiers' and sailors' kits, returned to their country, after their death, will be treated in the same way as the articles named in 1, as above.

2. Rags, not excepting rags compressed by hydraulic force, which are carried as merchandise in bales.

3. Used sacks, carpets, and embroidery that has been used.

4. Raw hides, untanned and fresh skins.

5. Fresh animal refuse, claws, hoofs, horse hair, hair of animals generally, raw silk and wool.

6. Human hair.

The transit of susceptible goods or articles packed in such a way that they cannot be handled on the way must not be forbidden.

Similarly, when susceptible goods or articles are transported in such a manner that they cannot have come into contact with contaminated† objects during the journey, their transit through an infected* local area must not bar their importation into the country to which they are consigned.

The rules regarding the prohibition of the import of susceptible goods and articles shall not be applied in cases where it is proved to the authority of the country to which they are consigned that they were despatched at least five days before the occurrence of the first case of plague.

Merchandise must not be kept in quarantine on land frontiers. Absolute prohibition or disinfection are the only measures which may be taken.

II.—Disinfection.

Baggage.—Disinfection shall be compulsory in the case of soiled linen, wearing-apparel, clothes and articles carried as personal baggage or household goods, if they have come from a local area, declared infected,* and if the local sanitary authority deem them contaminated.

Merchandise.—Disinfection shall be enforced only in the case of merchandise and articles which the local sanitary authority considers contaminated, or whose importation may be prohibited.

It rests with the authorities of the country to which the articles are consigned to settle the manner by which and the place in which disinfection should be carried out.

* “*Contaminé*” in the original text.

† In the original text the word employed is “*souillé*.”

The disinfection must be carried out so as to injure the articles as little as possible.

Each country will settle the question of the compensation to be paid for damages resulting from disinfection.

Letters and correspondence, printed matter, books, newspapers, business documents, &c. (not including parcels received through the post), shall be subject to no restrictions or disinfection.

SECTION V.—*Measures to be taken on land frontiers. Railway traffic. Travellers.*

Passenger carriages and mail and luggage vans may not be detained on the frontiers.

If a carriage is contaminated,* it shall be detached from the train to be disinfected, either at the frontier, or at the nearest stopping place, if this can be arranged.

Goods vans shall be treated in the same way.

Land quarantine shall no longer be enforced. Only persons presenting symptoms of plague may be detained.

This principle does not affect the right of each country to close, if necessary, part of its frontiers.

It is of importance that the railway staff keep a watch on the travellers' health.

Medical intervention shall be confined to an inspection of the travellers, and the care of the sick.

Where there is a medical inspection, it will be combined, as far as is practicable, with the custom-house inspection, so as to detain the passengers as short a time as possible. On the arrival of travellers from an infected† area at their destination, it will be found of the greatest service to keep them under surveillance for 10 days, counting from the date of departure.

The measures to be taken in regard to the crossing of the frontiers by the railway and the Post Office staff should be settled by the administrations concerned. They shall be arranged so as not to interrupt the regular service.

Governments reserve to themselves the right to take special measures with regard to certain classes of people, especially—

A.—Gipsies and vagabonds.

B.—Emigrants and persons travelling or crossing the frontier in bands.

SECTION VI.—*Special rule for Frontier Tracts.*

The regulation of the frontier traffic, and of the questions involved in this traffic, as well as the adoption of exceptional measures of supervision, must be left to special arrangement between neighbouring countries.

SECTION VII.—*Water-ways, rivers, canals, and lakes.*

The task of regulating by special arrangements the sanitary rules for water-ways must be left to the Governments of the countries bordering such water-ways.

SECTION VIII.—*Ocean traffic. Measures to be taken at ports.*

Any ship with plague on board, or on board which one or more cases have taken place within 12 days, will be considered *infected*.

* "*Souillé*" in the original text.

† "*Contaminé*" in the original text.

Any ship on board which there has been a case of plague at the time of departure, or during the voyage, but on which no fresh case has occurred for 12 days, will be considered as *suspected*.

Any ship, even though coming from an infected* port, which has had no death from plague nor case of plague on board, either before departure, during the voyage, or on arrival, will be considered as *healthy*.

Infected ships are subject to the following rules:—

1. The sick will be immediately disembarked and isolated.
2. The other persons on board must also, if possible, be disembarked and kept under observation or surveillance† for a period varying according to the sanitary condition of the ship, and the date of the last case, but which must not exceed ten days.
3. The soiled linen, the things for personal use and articles belonging to the crew and passengers which, in the opinion of the sanitary authority of the port, shall be considered as contaminated, shall be disinfected.
4. The bilge-water shall be pumped out after disinfection, and good drinking-water shall be substituted for the water stored on board.
5. All parts of the ship which have been inhabited by plague patients must be disinfected. More extensive disinfection may be ordered by the local sanitary authority.

Suspected ships are subjected to the following measures:—

- (1) Medical inspection.
- (2) Disinfection; the soiled linen, the things for personal use and the articles belonging to the crew and passengers, which, in the opinion of the local sanitary authority, shall be regarded as contaminated, shall be disinfected.
- (3) Pumping out the bilge-water after disinfection, and the substitution of good drinking-water for the water stored on board.
- (4) Disinfection of all parts of the ship which have been inhabited by plague patients. More extensive disinfection may be ordered by the local sanitary authority.

It is recommended that a watch (*surveillance*) should be kept over the health of the crew and passengers for ten days from the date of arrival of the ship.

It is also recommended that the crew should not be allowed to land, except on duty.

Healthy ships shall be given free pratique at once, irrespective of the nature of the bill-of-health.

The only measures which the authorities of the port of arrival may enforce with regard to such ships consist in those which are prescribed in the case of suspected ships (medical inspection, disinfection, pumping out the bilge-water, and the substitution of good drinking-water for the water stored on board), except that the measures prescribed for the disinfection of the ship itself may not be enforced in the case of healthy ships.

It is recommended that a watch (*surveillance*) should be kept over the health of the crew and passengers for ten days from the date on which the ship left an infected* port.

It is also recommended that the crew should not be allowed to land except on duty.

* "*Contaminé*" in the original text.

† *Note*.—The expression "observation" means isolation of the passengers, either on board a ship, or in a lazaretto before obtaining free pratique. The expression "surveillance" means that passengers will not be isolated; they will at once obtain free pratique, but on arriving at their destination they will be subject to medical supervision.

It is to be understood that the competent authority of the port of arrival may always demand a written declaration, on oath, from the doctor of the ship, or failing him, from the captain, that there has been no case of plague on the ship since her departure.

In deciding on the extent to which effect is to be given to the measures prescribed above, the competent authority of the port shall take into consideration the fact of there being a doctor, or a disinfecting apparatus (disinfecting chamber) on board the ships coming under the three headings mentioned above.

Special measures may be prescribed for crowded ships, particularly for emigrant ships, or any other ship in an insanitary state.

Goods arriving by sea must be treated in the same way as goods arriving by land, as regards disinfection, prohibition of import, transit, and quarantine.

Any ship objecting to submit to the obligations imposed by the authority of the port shall be free to put back to sea.

The disembarkation of goods from such ship may be authorised after the following necessary precautions have been taken:—

- (1) Isolation of the ship, crew and passengers.
- (2) Pumping out the bilge-water after disinfection.
- (3) Substitution of good drinking-water for the water stored on board.

The disembarkation of passengers wishing to land from such ship may also be authorised on condition that they submit to the measures prescribed by the local authorities.

Each country must provide at least one port on each of its seaboard, with the organisation and equipment necessary to enable it to receive a ship, whatever its sanitary state.

Coasting vessels shall be subject to special rules, to be drawn up conjointly by the countries concerned.

SECTION IX.—*Measures to be taken with regard to ships coming from an infected* port and ascending the Danube.*

Until the town of Sulina is provided with good drinking-water, the sanitary condition of ships ascending the river must be subjected to thorough sanitary supervision.

Overcrowding of passengers shall be strictly forbidden.

Ships entering Roumania by the Danube shall be detained for medical inspection, and until disinfection has been completed.

Ships arriving at Sulina must, before being permitted to ascend the Danube, undergo one or more medical inspections by day. Each morning, at a stated hour the doctor shall satisfy himself as to the state of health of all persons on the boat, and shall not permit it to enter the river, until he is assured that their condition is satisfactory. He shall deliver, free of charge, to the captain or master, a sanitary passport, bill-of-health or certificate, the production of which shall be demanded at the subsequent places of call.

There shall be a daily inspection. The detention of non-infected ships at Sulina shall not exceed six days. Contaminated clothes will be disinfected on arrival.

Drinking-water of good quality shall be substituted for any water of questionable quality that may be on board.

The bilge-water shall be disinfected.

The measures above indicated shall be applied only to arrivals from ports infected* with the plague.

* "*Contaminé*" in the original text.

It is to be understood that a ship coming from a port that is not infected* may, if it does not wish to submit to the restrictive measures indicated above, refuse to embark travellers from an infected* port.

The rules for suspected and infected ships shall be the same as at other European ports.

CHAPTER III.

Instructions recommended regarding the method of disinfection.

1. Wearing apparel, old rags, infected dressings, papers, and other articles without value should be destroyed by fire.

2. Under-clothing, bedding, clothes, mattresses, carpets, etc., which are contaminated or suspected should be disinfected in disinfecting chambers at *normal pressure, or at a pressure of from one-and-a-half to two atmospheres, with or without circulation of saturated steam.*

Before a disinfecting chamber can be regarded as efficient for the purposes of disinfection, it must be subjected to tests, with the aid of a *signal thermometer*, showing the moment when the temperature in the middle of a mattress rises to at least 100° (Centigrade).

To ensure that the disinfection is effective, this temperature must be maintained for from 10 to 15 minutes.

3. Disinfecting solutions—

(a) Solution of corrosive sublimate, of 1 part in 1,000, *with the addition of 10 parts of chloride of sodium.*

The solution should be coloured with *aniline blue or indigo*. It should not be placed in metal vessels.

(b) A 5 percent. solution of pure crystallized carbolic acid, *or 5 per cent. of crude commercial carbolic acid in a warm solution of soft soap.*

(c) Fresh slaked lime.†

4. Special instructions to be observed in the employment of disinfecting solutions.

The linen, clothing and articles soiled by the excreta of patients should be soaked in the solution of corrosive sublimate. The solution of pure carbolic acid, and the solution of soap and carbolic acid are perfectly suitable for the same purpose. The articles should remain in the solution for at least six hours.

Articles which cannot be subjected to the temperature of the disinfecting chamber (100° Centigrade) without injury, such as leather goods, wooden articles stuck together with glue, felt, velvet, silk, etc., should be washed with the solution of corrosive sublimate; coins can be disinfected with the solution of soap and carbolic acid.

Persons in attendance on the sick should wash their hands and faces with the solution of corrosive sublimate, or with one of the carbolic solutions.

The carbolic solutions will be useful more particularly for disinfecting articles, such as metals, instruments, etc., which can neither be subjected to a temperature of 100° Centigrade, nor placed in contact with corrosive sublimate without damage.

* "*Contaminé*" in the original text.

† To get very strong slaked lime, take lime of good quality, slake it, by moistening it gradually, with half its weight of water. When the operation is completed, put the dowder in a carefully corked receptacle, and place it in a dry spot. As each kilogramme of lime absorbs 500 grammes of water in order to become slack, it acquires a volume of 2 litres 200, and it is sufficient to dilute it with double its volume of water, say 4 kilogrammes 400 grammes to obtain a whitewash which will be of about 20 per cent. strength of lime.

Slaked lime is particularly recommended for disinfecting excreta and vomited matters. Expecterated and purulent matters should be burnt.

5. Disinfection of ships with plague patients on board.

The cabin or cabins, and all parts of the ship occupied by the sick or suspected, should be cleared out and all articles in them should be treated as described above.

The walls should be disinfected with the solution of corrosive sublimate with an addition of 10 per cent. of alcohol. The spraying should commence from the top, horizontally, and be continued downwards, so that the whole surface of the wall becomes covered with a coating of minute drops.

The flooring should be washed with the same solution.

Two hours after, the walls and flooring should be scrubbed and washed down with plenty of water.

6. Disinfection of the hold of an infected ship.

To disinfect the hold, sulphate of iron, in quantity sufficient to neutralise the sulphurated hydrogen, should first be thrown in, the bilge-water should be pumped out, and the hold washed with sea-water. Solution of corrosive sublimate should then be thrown in.

The bilge-water should not be pumped out while the ship is in port.

CHAPTER IV.

Precautionary measures recommended for ships on departure, during the voyage, and on arrival.

Note.—Plague appears to be transmitted by the excretions of the sick (expecterated matters, excreta), by the morbid products of the disease (pus from buboes, etc.), and consequently by means of soiled linen, clothing, and hands.

I.—Measures to be taken on departure.

1. The captain should be careful not to embark persons suspected to be suffering from plague. He should refuse to receive on board dirty or suspicious linen, wearing apparel, and bedding, and, generally, all dirty or suspicious articles.

Bedding, clothes, wearing apparel, etc., that have belonged to persons suffering from plague should not be taken on board.

2. Before embarkation the ship should be put in a state of perfect cleanliness and she should, if necessary, be disinfected.

3. It is essential that the drinking-water taken on board should be obtained from a source free from all possible contamination.

Water is not dangerous if it is distilled or boiled.

II.—Measures to be taken during the voyage.

1. It is desirable that every ship should have a special place reserved for the segregation of persons attacked by contagious disease.

2. If there is no such place on board, the cabin or other place, in which a person is attacked with plague, should be forbidden to all on board except those attending the patients.

Such attendants should be cut off from all contact with the other persons on board.

3. The bedding, linen, and clothing which have been in contact with the patient should immediately, and in the patients' room, be soaked in a disinfecting solution.

The same measure should be taken in the case of the clothing of the persons who have attended on the patient and which may have become contaminated.*

Such of these articles as are of no value should be burnt, or thrown overboard, if the ship is not in port or in a canal. Other articles should be carried to the disinfecting chamber, in impermeable bags washed with a solution of corrosive sublimate, so as to avoid all contact with surrounding objects.

If there is not a disinfecting chamber on board, the articles should be soaked in the disinfecting solution for *six* hours.

The excretions of the sick (sputa, fœcal matters, urine) should be collected in vessels, into which a glass of one of the disinfecting solutions above described has been previously poured.

The vessels should be at once emptied into the latrines which should be carefully disinfected each time.

4. The places occupied by the sick should be carefully disinfected according to the rules previously laid down.

5. Corpses should be wrapped in a shroud impregnated with corrosive sublimate and thrown into the sea.

6. All the preventive measures taken during the voyage should be stated in the log, which should be submitted to the sanitary authority immediately on arrival in port.

7. These measures should be applied to everything that has been in contact with the sick, irrespective of the gravity and result of the illness.

III.—Measures to be taken on arrival.

1. If the ship is infected, the persons attacked should be disembarked and segregated in a place set apart for the purpose.

Those who have had access to the sick should be considered as suspected.

2. All contaminated articles and all articles, such as clothes, bedding, mattresses, carpets, and other articles which have been in contact with the sick, the clothes of those who have been in attendance on them, the articles in the patients' cabin, and in any cabin and on the deck, or parts of the deck where the sick have been, should be disinfected.

CHAPTER V.

Administration and Control.

Powers of the Constantinople Board of Health (Red Sea—Persian Gulf—Perso-Turkish, and Russo-Turkish frontiers).

1. The execution and control of measures against the spread of plague, prescribed by this Convention, are entrusted, in exercise of the powers of the Constantinople Board of Health, to the Committee established by Article 1 of Appendix IV of the Paris Convention of the 3rd April 1894, with this explanatory provision, that the members of this Committee shall be taken exclusively from the Constantinople Board of Health, and shall represent the Powers which have accepted, or may hereafter accept, the Sanitary Conventions of Venice, 1892, of Dresden, 1893, of Paris, 1894, and of Venice, 1897.

2. The proper working of the various sanitary establishments, enumerated in and prescribed by existing Regulations, is entrusted to the corps of

* "*Souillé*" in the original text.

diplomaed and duly qualified doctors, of disinfecting officers, of skilled artisans and of sanitary guards recruited from among persons who have performed military service as officers or non-commissioned officers, as provided for in Article 2 of Appendix IV of the Paris Convention.

3. The expenses of the establishment of permanent and temporary sanitary posts, as contemplated by this Convention, are, as regards the construction of the buildings, debitable to the Turkish Government. The Constantinople Board of Health is authorised, in case of emergency, to advance from the reserve fund the necessary money, which will, upon demand, be furnished by the "Mixed Commission" charged with the control of the sanitary tariff. In this case, it must supervise the construction of these establishments.

4. The Constantinople Board of Health must also organise without delay, the sanitary establishments at Khanikin, and Kizil Dizé, near Bayazid, on the Perso-Turkish and Russo-Turkish frontiers, out of the funds which are now placed at its disposal.

5. Articles 4, 5 and 6 of Appendix IV of the Convention of Paris of 1894 may be utilised for carrying out the present rules.

Powers of the sanitary, maritime, and quarantine Board of Egypt.

6. The expenses involved in the measures prescribed for in the rules contained in this Convention may be met by the following measures, which the Conference recommends, not only to meet the new requirements at Moses' Wells, but also to defray the cost of the increase of the staff under the Sanitary Board:—

(1) The prorogation, with the consent of the powers, of the Khedival Decree of 20th December 1896 (fixing the 1st July 1897 as the date for the application of the reduced tariff for lighthouse dues) until the difference between the receipts of the present tariff and the reduced tariff has reached the sum of £4,000 (Egyptian). The sum thus realised will be devoted to extraordinary expenses (new arrangements at Moses' Wells).

(2) For ordinary expenses (increase of staff) an annual payment by the Egyptian Government to the Sanitary Board of a sum of £4,000 (Egyptian), which can be levied on the surplus of the lighthouse service fund remaining at the disposal of the Government. From this sum, however, there will be deducted the value of a supplementary quarantine tax of P. T. 10 (piastres tariff) on each pilgrim, to be levied at El-Tor.

In the event of the Egyptian Government finding difficulty in meeting its share of the charges, the Powers represented on the Sanitary Board will arrange with the Khedival Government to ensure the participation of the latter in the estimated cost.

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